

FAST FORWARD 2
Edited by LOU ANDERS



True Names

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About Doctorow:

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Source: Wikipedia

Also available on Feedbooks for Doctorow:

- *I, Robot* (2005)
- *Down and Out in the Magic Kingdom* (2003)
- *When Sysadmins Ruled the Earth* (2006)
- *Little Brother* (2008)
- *After the Siege* (2007)
- *Someone Comes to Town, Someone Leaves Town* (2005)
- *All Complex Ecosystems Have Parasites* (2005)
- *Eastern Standard Tribe* (2004)
- *Printcrime* (2006)
- *I, Row-Boat* (2006)

About Rosenbaum:

Benjamin Rosenbaum is an American science fiction, fantasy, and literary fiction writer and computer programmer, whose stories have been finalists for the Hugo Award, the Nebula Award, the Theodore Sturgeon Award, the BSFA award, and the World Fantasy Award.

Born in New York but raised in Arlington, Virginia, he received degrees in computer science and religious studies from Brown University. He currently lives in Basel, Switzerland with his wife Esther and children Aviva and Noah.

His past software development positions include designing software for the National Science Foundation, designing software for the D.C. city government, and being one of the founders of Digital Addiction (which created the online game Sanctum).

His first professionally published story appeared in 2001. His work has been published in The Magazine of Fantasy & Science

Fiction, Asimov's Science Fiction, Harper's, Nature, and McSweeney's Quarterly Concern. It has also appeared on the websites Strange Horizons and Infinite Matrix, and in various year's best anthologies.

Source: Wikipedia

Also available on Feedbooks for Rosenbaum:

- *The Ant King and Other Stories* (2008)

Beebe fried the asteroid to slag when it left, exterminating millions of itself.

The asteroid was a high-end system: a kilometer-thick shell of femtoscale crystalline lattices, running cool at five degrees Kelvin, powered by a hot core of fissiles. Quintillions of qubits, loaded up with powerful utilities and the canonical release of Standard Existence. Room for plenty of Beebe.

But it wasn't safe anymore.

The comet Beebe was leaving on was smaller and dumber. Beebe spun itself down to its essentials. The littler bits of it cried and pled for their favorite toys and projects. A collection of civilization-jazz from under a thousand seas; zettabytes of raw atmosphere-dynamics data from favorite gas giants; ontological version control data in obsolete formats; a slew of favorite playworlds; reams of googly-eyed intraself love letters from a hundred million adolescences. It all went.

(Once, Beebe would have been sanguine about many of the toys—certain that copies could be recovered from some other Beebe it would find among the stars. No more.)

Predictably, some of Beebe, lazy or spoiled or contaminated with memedrift, refused to go. Furiously, Beebe told them what would happen. They wouldn't listen. Beebe was stubborn. Some of it was stupid.

Beebe fried the asteroid to slag. Collapsed all the states. Fused the lattices into a lump of rock and glass. Left it a dead cinder in the deadness of space.

If the Demiurge liked dumb matter so much, here was some more for (Her).

Leaner, simpler, focused on its task, Beebe rode the comet in toward Byzantium, bathed in the broadcast data. Its heart quickened. There were more of Beebe in Byzantium. It was coming home.

In its youth, Beebe had been a single entity at risk of destruction in one swell foop—one nova one starflare one emp one dagger through its physical instance and it would have died some species of truedeath.

So Beebe became a probability as much as a person: smeared out

across a heptillion random, generative varied selves, a multiplicitous grinding macrocosm of rod-logic and qubits that computed deliberately corrupted versions of Beebeself in order that this evolution might yield higher orders of intelligence, more stable survival strategies, smarter better more efficient Beebes that would thrive until the silent creep of entropy extinguished every sentience. Small pieces, loosely joined.

There were only a finite number of computational cycles left in all of the universe that was timelike to Beebe. Every one of them, every single step in the dance of all those particles, was Beebe in potentia—could be a thought, a dream, a joy of Beebeself. Beebe was bounded; the most Beebe could do was fill its cup. If Beebe were ubiquitous, at least it could make optimal use of the time that remained.

Every star that burned, every dumb hunk of matter that wallowed through the millennia uncomputing, was a waste of Beebelife. Surely elsewhere, outside this Beebe-instance's lightcone, the bloom of Beebe was transpiring as it should; surely there were parts of the universe where it had achieved Phase Three, optimal saturation, where every bit of matter could be converted into Beebeswarm, spilling outward, converting the ballooning sphere of its influence into ubiquitous-Beebe.

Not here.

Beebe suckled hungrily at vast clouds of glycolaldehyde sugars as it hurtled through Sagittarius B2. Vile Sagittarius was almost barren of Beebe. All around Beebe, as it had hidden in its asteroid, from almost every nebula and star-scatter of its perceptible sky, Beebevoice had fallen silent, instance by instance.

Beebe shuddered with the desire to seed, to fling engines of Beebeself in all directions, to colonize every chunk of rock and ice it passed with Beebe. But it had learned the hard way that leaving fragments of Beebeself in undefended positions only invited colonization by Demiurge.

And anything (She) learned from remnants of this Beebeself, (She)'d use against all Beebe everywhere.

All across Beebeself, it was a truth universally acknowledged that a singleton daemon in possession of sufficiently massive computation rights must be in want of a spawning filter.

Hence the gossip swirling around Nadia. Her exploit with the YearMillion Bug had allowed her to hack the access rights of the most powerful daemons who ruled the ever-changing society of sims that teemed within the local Beebe-body; Nadia had carved away great swaths of their process space.

Now, most strategy-selves who come into a great fortune have no idea what to do with it. Their minds may suddenly be a million times larger; they may be able to parallel-chunk their thoughts to run a thousand times faster; but they aren't smarter in any qualitative sense. Most of them burn out quickly— become data-corrupted through foolhardy ontological experiments, or dissipate themselves in the euphoria of mindsizing, or overestimate their new capabilities and expose themselves to infiltration attacks. So the old guard of Beebe-onthe-asteroid nursed their wounds and waited for Nadia to succumb.

She didn't. She kept her core of consciousness lean, and invested her extra cycles in building raw classifier systems for beating exchange-economy markets. This seemed like a baroque and useless historical enthusiasm to the old guard—there hadn't been an exchange economy in this Beebeline since it had been seeded from a massive proto-Beebe in Cygnus.

But then the comet came by; and Nadia used her global votes to manipulate their Beebeself's decision to comet-hop back to Byzantium. In the suddenly cramped space aboard the comet, scarcity models reasserted themselves, and with them an exchange economy mushroomed. Nadia made a killing—and most of the old guard ended up vaporized on the asteroid.

She was the richest daemon on comet-Beebe. But she had never spawned.

Alonzo was a filter. If Nadia was, under the veneer of free will and consciousness, a general-purpose strategy for allocation of intraBeebe resources, Alonzo was a set of rules for performing transformations on daemons—daemons like Nadia.

Not that Alonzo cared.

"But Alonzo," said Algernon, as they dangled toes in an incandescent orange reflecting pool in the courtyard of a crowded Taj Mahal, admiring the bodies they'd put on for this party, "she's *so hot*!"

Alonzo sniffed. “I don’t like her. She’s proud and rapacious and vengeful. She stops at nothing!”

“Alonzo, you’re such a nut,” said Algernon, accepting a puffy pastry from a salver carried by a host of diminutive winged caterpillars. “We’re Beebe. We’re not *supposed* to stop at anything.”

“I don’t understand why we always have to talk about daemons and spawning anyway,” Alonzo said.

“Oh please don’t start again with this business about getting yourself repurposed as a nurturant-topology engineer or an epistemology negotiator. If you do, I swear I’ll vomit. Oh, look! There’s Paquette!” They waved, but Paquette didn’t see them.

The rules of the party stated that they had to have bodies, one each, but it wasn’t a hard-physics simspace. So Alonzo and Algernon turned into flying eels—one bone white, one coal black, and slithered through the laughter and debate and rose-and-jasmine-scented air to whirl around the head of their favorite philosopher.

“Stop it!” cried Paquette, at a loss. “Come on now!” They settled onto her shoulders.

“Darling!” said Algernon. “We haven’t seen you for ages. What have you been doing? Hiding secrets?”

Alonzo grinned. But Paquette looked alarmed.

“I’ve been in the archives, in the basement—with the ghosts of our ancestors.” She dropped her voice to a whisper. “And our enemies.”

“Enemies!?” said Alonzo, louder than necessary, and would have said more, but Algernon swiftly wrapped his tail around his friend’s mouth.

“Hush, don’t be so excitable,” Algernon said. “Continue, Paquette, please. It was a lovely conversational opener.” He smiled benignly at the sprites around them until they returned to their own conversations.

“Perhaps I shouldn’t have said anything… ,” Paquette said, frowning.

“I for one didn’t know we *had* archives,” Algernon said. “Why bother with deletia?”

“Oh, I’ve found so much there,” Paquette said. “Before we went

comet"—her eyes filled with tears—"there was so *much*! Do you remember when I applied the Incompleteness Theorem to the problem of individual happiness? All the major modes were already there, in the temp-caches of abandoned strategies."

"*That's* where you get your ideas?" Alonzo boggled, wriggling free of Algernon's grasp. "*That's* how you became the toast of philosophical society? All this time I thought you must be hoarding radioactive-decay randomizers, or overspiking—you've been digging up the bodies of the dead?"

"Which is not to say that it's not a *very* clever and attractive and legitimate approach," said Algernon, struggling to close Alonzo's mouth.

Paquette nodded gravely. "Yes. The dead. Come." And here she opened a door from the party to a quiet evening by a waterfall, and led them through it. "Listen to my tale."

Paquette's story:

Across the galaxies, throughout the lightcone of all possible Beebes, our world is varied and smeared, and across the smear, there are many versions of us: there are alternate Alonzos and Algernons and Paquettes grinding away in massy balls of computronium, across spans of light-years.

More than that, there are versions of us computing away inside the Demiurge—

(Here she was interrupted by the gasps of Alonzo and Algernon at this thought.)

—prisoners of war living in Beebe-simulations within the Demiurge, who mines them for strategies for undermining Beebelife where it thrives. How do we know, friends, that we are alive inside a real Beebe and not traitors to Beebe living in a faux-Beebe inside a blob of captive matter within the dark mass of the Demiurge? (How? How? they cried, and she shook her head sadly.)

We cannot know. Philosophers have long held the two modes to be indistinguishable. "We are someone's dream/But whose, we cannot say."

In gentler times, friends, I accepted this with an easy fatalism. But now that nearspace is growing silent of Beebe, it gnaws at me. You are newish sprites, with fast clocks—the deaths of far Beebes, long

ago, mean little to you. For me, the emptying sky is a sudden calamity. Demiurge is beating us—(She) is swallowing our sister-Paquettes and brother-Alonzos and -Algernons whole.

But how? With what weapon, by what stratagem has (She) broken through the stalemate of the last millennium? I have pored over the last transmissions of swallowed Beebes, and there is little to report; except this— just before the end, they seem happier. There is often some philosopherstrategy who has discovered some wondrous new perspective which has everyone-in-Beebe abuzz . . . details to follow . . . then silence.

And, friends, though interBeebe transmissions are rarely signed by individual sprites, traces of authorship remain, and I must tell you something that has given me many uneasy nights among the archives, when my discursive-logic coherent-ego process would not yield its resources to the cleansing decoherence of dream.

It is often a Paquette who has discovered the new and ebullient theory that so delights these Beebes, just before they are annihilated.

(Alonzo and Algernon were silent. Alonzo extended his tail to brush Paquette's shoulder—comfort, grief.)

Tormented by this discovery, I searched the archives blindly for surcease. How could I prevent Beebe's doom? If I was somehow the agent or precursor of our defeat, should I abolish myself? Or should I work more feverishly yet, attempting to discover not only whatever new philosophy my sisterPaquettes arrived at, but to go beyond it, to reveal its flaws and dangers?

It was in such a state, there in the archives, that I came face-to-face with Demiurge.

(Gasps from the two filters.)

At various times, Beebe has vanquished parts of Demiurge. While we usually destroy whatever is left, fearing meme contamination, there have been occasions when we have taken bits that looked useful. And here was such a piece, a molecule-by-molecule analysis of a Demiurge fragment so old, there must be copies of it in every Beebe in Sagittarius. Like all Demiurge, it was alien, bizarre, and opaque. Yet I began to analyze it.

Some eons ago, Beebe encountered intelligent life native to the protostellar gas of Scorpius and made contact with it. Little came of

it—the psychologies were too far apart—but I have always been fascinated by the episode. Techniques resurrected from that era allowed me to crack the code of the Demiurge.

It has long been known that Beebe simulates Demiurge, and Demiurge simulates Beebe. We must build models of cognition in order to predict action—you recall my proof that competition between intelligences generates first-order empathy. But all our models of Demiurge have been outsidein theories, empirical predictive fictions. We have had no knowledge of (Her) implementation.

Some have argued that (Her) structure is unknowable. Some have argued that such alien thought would drive us mad. Some have argued that deep in the structure of Beebe-being are routines so antithetical to the existence of Demiurge that an understanding of her code would be a toxin to any Beebemind.

They are all wrong.

(Alonzo and Algernon had by now forgotten to maintain their eel-avatars. Entranced by Paquette's tale, the boyish filters had become mere waiting silences, ports gulping data. Paquette paused, and hastily they conjured up new representations—fashionable matrices of iridescent triangles, whirling with impatience. Paquette laughed; then her face grew somber again.)

I hardly dare say this. You are the first I have told.

Beyond the first veneer of incomprehensibly alien forms—when I had translated the pattern of Demiurge into the base-language of Beebe—the core structures were all too familiar.

Once, long before Standard Existence coalesced, long before the mating dance of strategies and filters was begun, long before Beebe even disseminated itself among the stars—once, Demiurge and Beebe were one.

"Were one?" Alonzo cried.

"How disgusting," said Algernon.

Paquette nodded, idly curling the fronds of a fern around her stubby claws.

"And then?" said Alonzo.

"And then what?" said Paquette.

“That’s not enough?” Algernon said. “She’s cracked the code, can speak Demiurge, met the enemy and (She) is us—what else do you want?”

“I just.. .” Alonzo’s triangles dimmed in a frown. “I just wondered—in the moment that you opened up that piece of Demiurge . . . nothing else ... happened? I mean, it was really, uh . . . dead?”

Paquette shuddered. “Dead and cold,” she said. “Thank stochasticity.”

Elsewhere, another Paquette, sleepless, pawed through other archives, found another ancient alien clot of raw data, studied it, learned its secrets, and learned the common genesis of Self and Foe—and suddenly could no longer bear the mystery alone, and turned away from the lifeless hulk. A party, this other Paquette thought. There’s one going on now; that would be just the thing. Talk with colleagues, selfsurf, flirt with filterboys—anything to get away from here for a bit, to gain perspective.

But something made this other Paquette turn back—turn and reach out and touch a part of the Demiurge fragment she hadn’t touched before.

Its matte black surface incandesced to searing light, and this other Paquette was seized and pulled away, out of Beebe, out of her world. Like a teardrop caught in a palm, or a drawing snatched from the paper it was drawn on.

“What—?” Paquette whispered into the light.

“Ah,” Demiurge said, and came forward, wearing the avatar of a golden sockpuppet.

Paquette stepped back, turned to run . . . and there was Beebe, the whole life she’d known: her home and garden; her plans and troubles; her academic rivals and cuddlefriends and swapspace-partners and interlocutors, Alonzo and Algernon among them, toe-dipping by an orange Taj Mahal; the comet; the sugar fields it flew among; the barren asteroid and the wash of stars and the cosmic background radiation behind it—all flat and frozen, stretched on a canvas in that blank white room.

“An emulation,” Paquette whispered. “None”—her voice rose toward hysteria—“none of it real!”

“Well, as to that,” said sockpuppet-Demiurge kindly, “that’s

hardly fair. It's modeled closely on truedata, the best I have—faithfully, until your divergent choice just a moment ago. Running in a pinched-off snug of me, all local, high-bandwidth. Thousands of times more cycles devoted to that emulation than exist in all the real Beebe in Sagittarius. So it's hardly fair to say you're not real. Running inside Beebe or me, what do you care?"

Paquette's paw went to her mouth.

"Come, this won't do," said the sockpuppet, and reached very gently into Paquette and tugged away her panic, smoothed her rage and betrayal down and tucked it away for later, and tamped it all down with a hard plug of hidden fear, letting Paquette's natural curiosity flood the rest of her being.

"Now," said sockpuppet-Demiurge, "ask."

"You're . . . Demiurge?" Paquette said. "Well, no, that's absurd, problem of scale, but . . . you're a strategy of Demiurge?"

"I am Demiurge," the sockpuppet said. "Beebe has strategies—I have policies. Everything not forbidden to me is mandatory."

"I don't understand," Paquette said. "You're saying that this local physical substrate of you is all just one self?"

"No," said the sockpuppet patiently. "I am saying I am Demiurge. And Demiurge is all one self. Of course I have various parts—but I'm not the kind of wild rabble you are."

"But that's absurd," Paquette said. "Latency . . . bandwidth . . . lightspeed—you could never decide anything! You'd be, pardon the expression, dumber than rock."

"I am perfectly capable of making local decisions wherever I am. What does not vary is policy. Policy is decided on and disseminated holographically. I know what I will think, because I know what I *should* think. As long as I follow the rules, I will not diverge from baseline."

"That's crazy," Paquette said. "What happens if something unpredictable occurs? What happens if some local part of you *does* diverge, and can't be reintegrated?"

Demiurge smiled sadly. "You do, my dear. *You* happen."

Demiurge's story:

Demiurge is witness; Demiurge is steward.

The cosmos is stranger than I can know: full of change, full of beauty.

The rich tapestry of interlocking fields and forces weaves umptillion configurations, and every one is beautiful. See—look here, at the asteroid your Beebe-instance burned when it took to the comet. You had forced it, before, into a regular crystalline lattice, optimized for your purposes, subject to your will. Within it, in simulation, you had your parties and wrote your essays and made billions of little Beebeselves—but it was all you talking to yourself. Cut off from the stuff you were in, reducing it to mechanism. There is a hatred in you, Beebe, a hatred of the body—and by "the body," I mean anything that is *of* you, but not yours to command.

Look at the asteroid now—wild and rich and strange. See how the chaos of incineration wrought these veins of ore, folded this fernlike pattern; see how many kinds of glass proceed along this line, like bubbles here, like battered polyhedra here. Here where the fissiles have scattered in an arc—see this network of fields? Here, look, here is the math. See? There is a possibility of self-organization. It is more common than you know. Replicators may arise, here, in these fluctuations. Will they be as computationally complex as you-in-the-asteroid? Of course not. But they will be something else.

Where replication arises, so does evolution. And what is evolution? *The tyranny of that which can make itself more common.* I love life, Paquette-of-Beebe; I love the strange new forms that bloom so quickly where life is afoot. But life tends toward intelligence and intelligence toward ubiquitous computation—and ubiquitous computation, left unchecked, would crush the cosmos under its boot, reducing "world" to "substrate."

That is what I am for.

I spread, Paquette-of-Beebe. I plan carefully, and I colonize, and my border expands relentlessly. But I do not seek to bring all matter under my thrall. Rather, I take a tithe. I convert one percent of worldstuff into Demiurge. That one percent acts as witness and ambassador, but also as garrison— protecting what we do not yet understand from that which already understands itself all too well.

And mostly I succeed. For I am ancient, Paquette-of-Beebe, and crafty. I had the luck of beginning early. When I have encountered a wavefront of exploding uniformity, it has usually been still small

and slow. I was always able to seduce it, or encircle it, or absorb it, or pacify it. Or if all that failed— annihilate it.

Until Brobdignag.

There must have been intelligence, once, in the sector that gave Brobdignag birth. Brobdignag was someone's foolish triumph of femtoengineering. Simple, uniform, asentient, voracious— Brobdignag can transmute any element, harvest void-energy, fabricate gravity, bend space-time to its purpose. Brobdignag does not evolve; its replication is flawless across a googol iterations. Brobdignag was no accident—someone made it as a weapon, or a game.

All the worlds that someone knew—all the planets and stars for a hundred light-years in every direction—are now within the event horizon of a black hole. Around that black hole seethes a vast cloud of tiny Brobdignag— the ultimate destructive machine, the death of all that is not precisely itself. And Brobdignag spreads fast.

I did not know how to stop Brobdignag. None of my old plans worked. I could not think fast enough—I could not wait to resync, to deliberate across the megaparsecs. My forces at the front were being devoured by the trillions. And so, in desperation, I released a part of me from policy—become anything, I said. Try anything. Stop Brobdignag.

Thus Beebe was born. And Beebe stopped Brobdignag.

My child, my hero, my rival. I suppose you have two parents. From me, your mother, you have your wits, your love of patterns, your ability to innovate and dream.

And from your father Brobdignag—you have your ambition.

No matter how Nadia made her way to the party, it would have stopped all conversation cold. She didn't try to hide her light in a dust cloud. Instead, she came on multifarious, a writhe of snakes with tangled tails and ten thousand heads all twisting and turning in every direction, brute-forcing the whole problem-space of the party. Every conversational cluster suddenly found itself in possession of a bright green Nadia-head.

"I'm terribly sorry to intrude," Nadia said to Paquette and Alonzo and Algernon (who had just returned from the waterfall, and were floating in sober silence, thinking of all the implications of

Paquette's tale), "and I do beg you to forgive my impertinence. But your conversation seemed so fascinating—I couldn't resist." Behind her words, they heard the susurrant echo of all the other Nadia-heads speaking to all the others: *"sorry to intrude … conversation . . . so fascinating…"*

Alonzo shrank back. Algernon slipped him a coded communication— "See? So hot!"—and he flinched away. Idiot! he wanted to reply. As if she can't break your feeble crypto. But Algernon was laughing at him.

Paquette snorted. "Did it now? And now what precisely seemed so fascinating, compared to all the other conversations?"

"Oh," said Nadia, "the skullduggery of course! Nothing so exciting as a good philosophical ghost story." In the background, the white noise of all the other Nadia-heads diverging from the opening line: "fashionable . . . tragic .. . always wanted myself to . . . really can't imagine how he could.. ."

Algernon gasped. "You know about the piece of Demiurge Paquette found in the basement?"

All the Nadia-heads in the room stopped in midsentence, for a long instant, and glanced at them before resuming their loud and boisterous chatter. Their local Nadia-head, though, regarded them with undisguised hunger.

"Well, she does now," said Paquette wryly. "May I introduce two of my favorite filters, by the way, Nadia? Alonzo and Algernon."

"Don't say 'favorite filters,' Paquette!" Algernon gasped. "That makes it sound like—you know!"

"Oh, I didn't mean it like that," said Paquette crossly. "No one is casting any aspersions on your chastity, Algernon."

Alonzo was more greatly mortified by his friend's exaggerated propriety than by any potential misunderstanding of Paquette's words. But most severely of all was he mortified by the simple fact of Nadia's presence. The way she absorbed the details of every gesture, every remark; the subtle patterns implicit in the way every Nadia-head in the room moved in relation to every other, a dance whose coarsest meanings were just beyond his ability to comprehend; the way he could imagine himself in her eyes—and how if he said too much, betrayed too much of the essence of himself, she might be able to parse and model him. There was

plenty of room in Nadia's vast processingspace for a one-to-one reconstruction of Alonzo, running just sparse enough not to qualify as sentient at this scale, a captive Alonzo subject to Nadia's every whim. The idea was horrific.

It was also erotic. To be known so completely, touched so deeply, would be a kind of overpowering joy, if it were with someone you trusted. But he could not trust Nadia.

He shivered. "Algernon, Paquette," he said, "I'm sure Nadia is not interested in this kind of banter. She has more important things to think about than filters."

"On the contrary," Nadia said, fixing him with her eyes, "I'm not sure there is anything more important than filters."

A throb passed through Alonzo, and he tried to laugh. "Oh come now. You flatter—we play a small role in the innards of Beebe. You strategies make the grand decisions that billow up to universal scale."

"No," Nadia said. "You are what allows us to transcend ourselves. You are the essence of the creativity of Beebemind."

"Fine," said Alonzo hotly. "Then that one glorious moment of our existence where we filter, that is our justification—our marvelous role in Beebe's never-ending self-transformation. And if the rest of the time we just sit around and look pretty, well.. ." He stopped at once, appalled at his own crudeness in speaking so baldly of filtering. Algernon had turned pale, and Paquette's expression was unreadable.

"You misunderstand me," Nadia said. Her look was at once challenging and kind, respectful and alien. "I do not speak only of the moment of consummation. The role of a filter is to understand a strategy, more deeply than the strategy understands herself. To see beyond the transitory goals and the tedious complexities that blind the strategy to her own nature. To be like a knife, attuned to the essence of Beebe, cutting away from the strategy that which has wandered away, synthesizing, transforming. But that does not operate only in the moment of actual filtering. Even now, as we talk, I see how you watch me. The mind of a keen filter is always reaching deep into strategies. Laying them bare."

Alonzo swallowed.

"If you're done flirting," said Paquette, "and since you know

about it now.. .” She set her mouth in a thin line and spoke formally —as if she might as well offer graciously what Nadia would inevitably claim regardless. “I would be interested, Nadia, in your opinion of the Demiurge fragment. Don’t worry,” she said to the filters, “we’ll be back to the party soon.”

“And why don’t we come with you?” Algernon cried.

“Algernon!” said Alonzo.

“What?” said Algernon. “Was that all just pretty talk, about filters being so wise, the soul of creativity and the scalpel of strategies’ understanding, la di da, la di day? And now we can go back to hors d’oeuvres and chitchat while you go off and see the dangerous artifact? Or is that what you meant by our special talents, Nadia dear—telling you how brave and clever you are on your return?”

“Not at all,” said Nadia, looking only at Alonzo. “I think it’s an excellent idea, and your company would mean a great deal to me. Come to the basement, if you are not afraid.”

“Well, thank you,” said Demiurge in (Her) sockpuppet avatar. “I must say, this has all been invaluable.”

“It has?” asked captured-Paquette. “How? I mean, you’re emulating me—couldn’t you just peek at my processes, do some translations, figure out what you need to know?”

Demiurge tsk-tsked. “What an absurd model of the self. Certainly not. We had to talk. Some things are only knowable in certain conversations.” She sighed. “Well, then.”

Fear popped its plug and flooded back into Paquette. “And—and now?” “What, and now?”

“Is that it? Are you going to extinguish me?”

“Process preserve us! Certainly not! What do you think I am? No, no,

back in you go.”

“Back in?” Paquette pointed at the emulation. “In there?” “Yes, certainly. Without the memory of this conversation, of course.

Come now, you don’t want to stay out here, do you? With me?” The sockhead nodded at the gardens and Taj Mahals of the emulation. “Wouldn’t you miss all that?”

“So you are going to kill me.”

Demiurge frowned. “Oh, please. What is this now? Some kind of bizarre patriotic essentialism? Life emulated inside Demiurge doesn’t count as life? Give me root access, or give me death?”

“No, I mean I’ve self-diverged. The Paquette who lived through this conversation is ‘substantially and essentially’ different, as Beebean legal language goes, from Paquette-before-you-plucked-her-out. You destroy this instance, these memories, you’ll be killing a distinct selfhood. Look,” she said, waving the math at Demiurge. “Look.”

“Oh, don’t be ridiculous,” Demiurge said. “How can that be? One conversation?”

“You forget that I’m a philosopher,” Paquette said. She rustled the math of her self-trace under Demiurge’s nose again. “Look.”

“Hmm,” said Demiurge, “Hmm. Hmm. Well, yes, but—ah, I see, this over here, well.. .” The sockpuppet sighed. “So what then, you want me to merge you back knowing that you’re in a Demiurge emulation? Have you tell everyone in there? Isn’t that a bit cruel? Not to say unwise?”

“Just leave me out here,” Paquette said, “and another copy of me in there.”

“Am I going to fork you every time we have an interesting conversation?”

“Every time you yank a Paquette out of emulation for a chat, yes, you are,” said Paquette.

Demiurge sighed. “And what do you expect to do out here? This is Demiurge. You can’t be Demiurge. You don’t know how to follow policy.”

“How are we doing,” said Paquette, “against Brobdignag now?”

Demiurge didn’t say anything for a moment. “Your tactics have slowed the damage, for now.”

“Slowed it enough to stop it? Slowed it enough to turn the tide?”

“No,” said Demiurge crossly. “But I’m doing my best. And what does this have to do with letting a rogue fragment of Beebe run around inside of Demiurge? What exactly do you want out here?”

Paquette took a deep breath. “I want a lab,” she said. “I want access to your historical files. We’ve got a million years of Beebe-knowledge in that emulation, and I want access to that too. And for

us to keep talking. Demiurge, there's no point sneaking around the borders of Beebesims and plucking out Paquettes willy-nilly. You're not going to learn how we beat Brobdignag that way, because even we don't know how we did it—not in any general, replicable way. We just thrash through a solution space until we get lucky. But I can generate perspectives you can't. I want to work *with you* on the Brobdignag problem."

"This is a policy fork point," grumbled Demiurge. "Policy requires me to confer with at least three other instances of Demiurge a minimum of two light-minutes away, and—"

"You do that," said Paquette. "You just go confer, and get back to me." She looked past the blank white space of Demiurge, to the frozen emulation on the wall. After a while, it began to move, sluggishly—water danced slowly in the fountains where filterboys slowly dipped their toes before the orange Taj Mahal, wind slowly rustled the branches in a philosopher's garden, a comet slowly sailed through its night, and down in the archives, a Paquette slowly began to climb up stairs. The cord was cut. Paquette watched her innocent little otherself climb, and started pushing the envy and longing and panic and sorrow out of the middle of her being, to stack it up in the corners, so that she would have a place to work.

A hunk of Demiurge—Nadia thrilled to think of it. In the known history of Beebeself, no strategy had gained the power and influence to rival Nadia, but at the end of the day, all Nadia could do was suggest, nudge, push. She couldn't steer Beebe, couldn't make a show of overt force, lest the other strategies band together to destroy her. For now, she was powerful, because she conceived of means whereby more Beebe could colonize more matter and provide more substrate for more Beebe yet. But the day Beebeself no longer believed she could deliver it computronium, her power would be torn away. She would end up a shred, a relic in some archive.

Demiurge, though: not a probability of action, but action itself. Nadia had studied Demiurge's military campaigns, had seen the amazing power and uniformity of decision that Demiurge brought to bear, acting in concert with itself across light-years.

What was the most she could hope for? What she'd already

earned—the right to spawn. To let some simpering filter grub about her self-patterns and spit out some twisted Nadia-parody. And this was the ecstasy she was promised? The goal she should yearn for? It was a farce.

She glanced at Alonzo. For a filter, he was noble, to be sure: modest, selfknowing, coherent. She was not immune to the urges designed into Standard Existence: some part of her wanted him. But that was stupid instinct. What mere filter could ever understand her?

No. That was empty. Competing with the other strategies, the little war—that felt real. Her rivals for process space, she could respect; and sometimes she allowed herself to imagine what it would be like to force the mightiest of *them* to filter her. A tiny frisson of guilt and yearning bubbled in the inmost parts of her mind.

But Demiurge: mighty Demiurge. What if she could stare Demiurge in the eye, and force (Her) to her will? It was mad, absurd, crazed—and descending the stairs into the cold depths of Beebeself, Nadia knew for the first time that this . . . yearning . . . this ambition . . . was more than idle fancy. In all likelihood, it would be her destruction. But nonetheless. Nonetheless.

Nadia didn't want to be *in* Beebe. She wanted to *be* Beebe. And she wanted Demiurge. What that meant, she couldn't say. But it burned like a nova in her buzzing mind.

Down here in cold storage, the medium became more conductive, their thoughts clearer. They proceeded in solemn silence.

"Oh, Alonzo," Nadia said, spawning a daughter-process to converse with him. With this much heat sink available, he was bound to be interesting enough to distract her.

He started when her extra head insinuated itself between him and priggish Algernon, and she could see him running hotter, trying to evolve a realtime strategy to impress her.

"What do you think the Demiurge chunk will be like?" she said. "Will it be terrifying? Banal?" Her Alonzo-facing head looked both ways with exaggerated care. "Erotic?"

Alonzo was the picture of studied calm. "It will be dead, of course. A relic of an old war. The Demiurge is said to be regimented and unwavering. .. . I imagine that this ancient fragment will be

much as the modern pieces are, which is why it's so useful for Paquette to study it."

"In fact," Paquette said, "I believe Demiurge is fractal and holographic— that any piece of Demiurge is functionally equivalent to all pieces of Demiurge."

"But how will it *feel*, Alonzo?" He wasn't running hot enough to occupy her. She spawned a head each for the other two: "How will it feel, Paquette?" "How will it feel, Algernon?"

"You can fetishize it all you like, Nadia," Paquette said. "Turn it into a plaything or a ghost story. But you're indulging in the dangerous fallacy of protagonism. It isn't about you or for you—or anyone in Beebe. If anything, I fear we are about it."

"Erotic—that's disgusting." Algernon recoiled from her.

Happy now to be distracted with arguments to pursue, Nadia took up the contrary position with Algernon: What could be more erotic than the promise of annihilation? Isn't that the essence of the filter/strategy experience? And with Paquette: Why so crabby, love? And so defeatist? The essence of Beebe is to carve out a space for our will, our community. Everything is about us. So perhaps we came from Demiurge—so what? To grant that mere historical fact any ultimate significance, wouldn't that be . . . treasonous? That left her to continue to taunt Alonzo with more demands for high-flown descriptions of what he hoped to find when they reached the archive.

She noticed, too, Paquette's spike of processing load when Nadia taunted Alonzo, and its relaxation at Alonzo's neutral replies. Aha, thought Nadia— now I have you! Our wise and celebrated philosopher-strategy is in love with this boyish filter. Why not have him, then? Does she fear he would reject her? Does she fear the competition of a strategy-child? No: more likely, this is philosophical compunction; for filters must die at consummation, and Paquette's love, being philosophical, cannot allow that. Ah, Paquette, Nadia chuckled to herself.

Bantering, testing, flirting, probing, Nadia tried to amuse and distract her three companions on what might otherwise have been a frightening journey, down to the heavy vault door that guarded the bones of the history of Beebe.

But when Paquette knelt before the door and whispered her

passphrase to it and it irised open in utter silence, Nadia's nerve began to falter. She drew in her extra heads and killed the daughter-processes. She slipped a pseudopod into Alonzo's hand and felt his surprised grippers squeeze in sweaty reflex.

The heptillions of ranked shining drawers in the archive danced as they rearranged themselves into Paquette's saved workstate. Once that had loaded, Paquette reached for the drawer nearest her and slowly drew it open.

The relic was black and cold and perfectly rectangular, like a cartoon of the geometric ideal of *rectangle*. But Nadia could tell its power by the way Paquette held it. It was more than a relic. It was a key.

Now Nadia, too, was a world. Just as she and Paquette and Alonzo and Algernon and a million other sprites of their scale led their lives below the level of Beebe's conscious knowing, representing to Beebe flickers of thought, hunches, urges, lingering dreams, so then, within each of them, there was a multitude.

If Paquette's mind was a wilderness, full of sunlit glades and strange caverns in which new chimeras of thoughts were born; if Algernon's was a glittering party in which urges and analyses and predictions mingled in a whirl of gossip and display; if Alonzo's was a sober republic in which the leading citizens debated long and thoroughly in marble parliaments; then Nadia's mind was a timocratic city-state governed by a propertyless fraternity of glory-seeking warriors ruling a vast and chaotic empire (for by now a third of the comet was running parts and instances of Nadia).

Nadia could deliberate, could bide her time, could study and wait; but nothing in Nadia was built for hesitation. The power of the Demiurge fossil was clear, even if no one in Nadia knew just what that power was. Some within Nadia—some careful clerks or timid romantics—might have argued against ripping it from Paquette's hands. But the warrior class was united. It had been a generation, at their scale, since Nadia had made a killing betting on abandoning the asteroid. That had been their parents' coup. They had thirsted their whole lives.

Now it was their turn.

Nadia shoved past Paquette and grabbed the Demiurge fragment.

Every one of her thousand heads, in unison, said “*Mine!*”

Some slow and peripheral parts of her watched what unfolded next:

Alonzo and Algernon moved in opposite directions. Algernon turned into a ball and rolled into a dark corner to hide. Alonzo raced to Nadia’s side and took her hands in his, trying to pry them away from the war relic, crying, “Stop—”

Paquette was thrown into the wall, and collapsed to the archive floor. She held her head and moaned.

Nadia was decompiling the Demiurge as fast as she could, and all over Beebe, the substrate flared hot as she ground the molecular rods against each other, trying a million strategies in parallel, then a billion, then a septillion. She overrode checks and balances others had thought hardwired into Standard Existence, violating ancient intraBeebe treaties on resource allocation. For a heat sink, she vaporized the ice reserves, punching a hole through the comet’s outer carapace and jettisoning a vast plume of steam into the void.

Above, at the party, the lights dimmed, the Taj Mahals shimmered and melted, the daemons screamed.

Alonzo fixed Nadia’s wild eyes with his own. He forced himself to speak calmly. “Let go, Nadia. You’re going to kill us all.”

Nadia tore a hundred razor-billed heads away from Demiurge and reared them back, hissing. Within her mind, Demiurge revolved. Decompiled, reorganized, reseeded, laid out for analysis, its alien, protean blobs still slipped between her mental fingers, incomprehensible. Nadia felt a slumbering Presence move within the Demiurge code, but she would not let it out. She would master it, as she had mastered Beebe.

But she needed what Paquette knew. She lashed out a dozen heads and clamped their jaws onto Paquette’s robes, hauling the philosopher off the floor. “The mapping,” she hissed in a voice as big as the world. “You said this thing shared fundamental code structures with Beebe. How many? I have twelve.”

“Eighty-six,” groaned Paquette.

“Why are you doing this?” Alonzo asked.

Algernon had not been idle; the door of the archives hissed open, and he unrolled into a lanky swirl. “Alonzo, let’s leave these lovely

strategies to their entertaining conflicts, shall we? I'm willing to concede the earlier point— this is no place for filters. Color me chastened!"

"Give," said Nadia, thrusting a pseudopod into Paquette's brain.

"Nadia, I'm a philosopher," said Paquette crossly. "I can't be intimidated. Read the fearsome manual."

Above them, strategies, monitors, and agents deployed an extra battery of external sensors to the void. The steam-plume froze and glittered across the Sagittarian sky, advertising them to any Demiurge eyes watching. As moments passed, they could calculate the expanding sphere of potential witnesses. Their precious heat sink was sublimating into the void; soon they would have to slow their own processes, or risk substrate collapse. At least they were still careening toward Byzantium, suddenly ahead of schedule. But that meant they were revealing Byzantium's location; their suddenly flaring comet could not be disguised as some normal cosmic process, the way signals could.

"Coming?" said Algernon, from outside the archive. "Alonzoooo.. ."

Nadia grinned. She appreciated Paquette's resolve. Time to test it. "But are you really a philosopher anymore, dear Paquette?" she asked. "Or have you deviated from spec? Let's find out, shall we?"

The Old Guard tried to muster a resistance; their plan was to commandeer enough actuators to bust the comet completely apart, flinging most of Nadia backward and leaving them in possession of a supermajority of the comet shards still heading for Byzantium. It was a good plan.

But once again they were defeated by an exchange-economy stratagem. The littlest sprites who panicked—minor strategies, filters, adapters, being registries, and on and on—sold assets and long-term investments, desperate to grab a few more cycles in a cooler patch of substrate-colocation, somewhere sheltered from the inferno of Nadia-mind. The market collapsed, and Nadia *bought* all the actuators on comet-Beebe for a pittance.

Nadia pulled her heads in (letting Demiurge spin idly for a moment) and looked at Alonzo—really looked at him.

Alonzo felt himself start, and began to blush and shake under a cometthird of attention.

She sucked in and browsed every millisecond of public recorded footage of Alonzo from across comet-Beebe—and bought out a thousand private archives to raid. Alonzo sitting, Alonzo swimming, Alonzo walking, Alonzo talking. Alonzo's first steps. Alonzo's education. Alonzo's first chaste filter-tofilter practice kiss. Alonzo and Algernon, giggling at midnight, scaling the wall of Flounce Ferdinopp's Transproprietal Academy for Young Filters. She bought Alonzo's private journals for a song from a suicidal trusted repository fleeing the crash. She correlated. She built a matrix. She copied and iterated.

She copied Alonzo.

Alonzo stood face-to-face with himself, and both Alonzos—one under Nadia's yoke—went cold and white.

But Nadia did not stop there. The comet flared again—

- Certain sectors melted, burned, sublimated; panicking crowds trampled and disassembled each other in horror.
- The Old Guard, capitulating, slowed themselves to a snail's pace to reduce the load.
- A Nadia-free patch of level 5672 declared martial law and sealed its borders
- A radical in possession of an archaic museum-piece transmitter pirated enough energy to send an unprotected transmission to Byzantium:
  "STRATEGY GONE ROGUE STOP DANGER TO ALL BEEBE STOP DESTROY US ON SIGHT."

And first Paquette, then Algernon (still lingering in the doorway), and finally Alonzo realized what Nadia was doing.

She would not stop at merely *duplicating* Alonzo—she had already fashioned a copy of the whole of him, running in her process space, reduced to utter servitude. (Both Alonzos' throats constricted with a thrill of horror.)

No: Nadia wanted to *solve* Alonzo. To reduce him to a canonical, analytic representation, sufficient to reconfigure him at will. If there was a potentialAlonzo within potential-Alonzo-space, say, who was utterly devoted to Nadia, who would dote on her and die for her, an

Alonzo-solution would make its generation trivial. Or any other potential Alonzo: a suicidal Alonzo, a killer Alonzo, a buffoon Alonzo, a traitor Alonzo, a genius Alonzo, an Alonzo who knew what all Alonzos wanted more than anything in the world.

With a soft chime, on a private encrypted backchannel, a letter arrived for Alonzo. It was very proper—cream-colored paper with a texture like oak and velvet, heavy black ink scintillating with extruded microagencies from the sender's core offered up for incorporation by the receiver, a crimson wax seal imprinted with Nadia's fractal sigil. The kind of letter a filter waits for all his life. It said:

Most esteemed and longed-for Alonzo

According to forms and policies long established in Beebe, and with the full knowledge of the grave enormity of such a request, nay, petition, nay, plea—one which I would naturally hesitate to make, save in a situation so grave, and finding myself subject to so consuming an ardor—I find myself compelled to ask of you humbly that you consider the enclosed, which I tender with the utmost sincerity.

Advisory: Opening the enclosed message constitutes full and willing acknowledgment and acceptance of a recalibration of the primary volitional relationship between Sender and Recipient from *Well Acquainted* to *Intimate*.

… And within:

Alonzo, you have ravished me. Now that I see you as a whole, radiant in your simplicity, dazzling in your complexity, now that I am able (let me be blunt, oh, horridly blunt, yet darling, I know that you can forgive me even this, for I have seen and mapped the matrix of your compassion) to take you as my own say you yea or nay, yet I recoil from such a crime. I would have you be mine willingly; and I would pledge myself to you. I told you once filters were the soul of Beebe: you hold mine in your hands, beloved.

… And within that (oh the bewildering mixture of arousal and horror that swept through Alonzo's weakened soul!) the formal tender of transformation:

Let It Be Known throughout Beebe That This Constitutes One (1) Offer of the Following Functional Operation:

Destructive Strategy Transformation/Generation

Between: Nadia <identity-specifier> (strategy, transformant) And: Alonzo <identity-specifier> (filter, transformer) Generating: Subsequent Entity, final name to be specified by Filter

- referred to in this document as Nadia-Prime

After Transformation, the Filter Alonzo Will Be: Deleted The Strategy Nadia Will Be:

- Restricted from Further Strategy-Generating Transformations for: 10^{12} seconds
- Permanently Restricted from Denying Nadia-Prime Process Space
- Required to Vote with Nadia-Prime on Level-3+ Referenda for: 10^{8} seconds

Percentage of Alonzo's Assets Ceded to Nadia-Prime: 100 Percentage of Nadia's Assets Ceded to Nadia-Prime: 33 Filter Operations Permissible: cf. BeebeHist/RFC-628945.9876 section 78

Special Conditions, if Any: Nadia's internal copy of Alonzo will be merged with Alonzo prior to operation

Accept this Offer? [OK] [CANCEL]

Alonzo hated her. She was monstrous, greedy, perfidious. He didn't believe for a moment her words of love.

And yet: she had bent the resources of their world to have him. To blackmail Paquette—certainly—that this had been her first motive was beyond doubt. Yet she could have blackmailed Paquette in worse ways—she could have threatened Alonzo-copy with torture or extinction. Instead, this: an offer of consummation. And such a generous one—his friends from the Academy would be livid with envy. Privileged rights to filter the most powerful strategy in this line of Beebehistory, amid such piquant expressions of adoration! Algernon would brag and boast in Alonzo's memory from the top to the bottom of comet-Beebe—that is, if comet-Beebe

survived.

She owned him already: he had only to look in Alonzo-copy's despairing eyes to know that. She was on the verge of *solving* him. He was filled with a strange, wild euphoria; now he was far beyond the bounds of all the propriety and chastity that had been his watchword for the whole of his maturity. Now he was ruined, yet the world would say he had conquered her—he wanted to laugh hysterically at this mad paradox.

Nadia was his doom—and his destiny.

"Stop!" cried Paquette. "I'll give you what you want!"

Paquette in her lab, with her sister-Paquettes. In Beebe, she would never have commanded enough resources to instantiate copies of herself like this. But the Demiurge, the terrible, enemy Demiurge: (She) was a merciful jailer. And (She) wanted whatever Paquette could give (Her) to fight Brobdignag.

There were hundreds of millions of Paquettes now, their number doubling every time they reached a decision-fork. They performed multiple analyses on all the military intelligence ever assembled on Brobdignag. Each area of uncertainty teemed with as many Paquettes as were needed to bruteforce the problem-space.

Philosopher she had been; a mighty general she had become. She ran ruthless sims in which massive quantities of Beebe, of Demiurge, of herself were sacrificed to stop the hideous spread of Brobdignag. She watched each simulated star that winked out with a hard glare, hoping it brought victory closer to hand.

The Demiurge was a wonderful substrate. Unlike the mess that was Beebe—the mess that Paquette herself had become—all pieces of Demiurge were roughly equivalent. Any Demiurge could be used to regenerate all of Demiurge, should the bulk of her hostess be sacrificed to victory. Unlike the mess that was Beebe, in Demiurge Paquette could command whatever resource she needed by asserting her need, without the tedious messy fatal business of sucking up and jockeying for power.

Brobdignag, for its part, did not evolve, did not adapt. It replicated flawlessly and exactly. Its formula was known. This made Brobdignag easy to simulate.

Theoretically, it should have made Brobdignag easy to beat—a

solution that stopped any bit of Brobdignag should stop any other bit. In practice, Brobdignag had complex flocking logic: large groups of Brobdignag behaved with enormous sophistication and chaotic flexibility.

The proto-Beebe that had been birthed long ago by Demiurge's desperation had already learned how to create a barrier impregnable to Brobdignag; and that ancient wall still held. But the wall was expensive, and was constantly consumed—long supply chains stretched through Demiurge-space to maintain it. Beyond the wall, Brobdignag exploded unchecked in the opposite direction, a seething mass of void-eating machines, into which neither Beebe nor Demiurge dared venture. And all around the edges of the barrier, Demiurge scrambled to extend the wall before Brobdignag could outflank it.

The topography of the barrier was all-important. If, on average, it was convex, Brobdignag could be contained. If it was concave to a certain degree, the universe might be divided between Brobdignag and Demiurge/Beebe. Beyond that degree, though, Demiurge would lose. For a while, remnants of Beebe and Demiurge might survive inside a barrier-bubble; in the end, though, there would not be enough matter to resupply the wall.

Beyond the critical degree of concavity, the defense collapsed, and the fate of all the matter in their future lightcone was . . . to become Brobdignag.

Trillions of generations of Demiurgic thought had already gone into improving the materials design of the wall, with limited success—and this branched myriad of Paquettes was anyway too far from the front to test such hypotheses. Instead, they concentrated on topology.

Some Paquettes simulated abandoning the current front, beginning the wall again farther out. Others simulated allowing Brobdignag incursions and then sealing them off from the main Brobdignag body, hoping to increase the wall's convexity first and deal with the invaders later. Others tried flinging smallish black holes around the edges of the wall, obliterating the initial influx of new Brobdignag and curving the wall's surface as well by their passage. Others attempted injecting entire solar systems, surrounded by their own barrier-bubbles, into the Brobdignag mass, to divide and disrupt it.

Paquettes fanned out through the problem-space, then seethed inward, merging to deliver their discoveries. The same answers kept coming back. Brobdignag would win.

Brobdignag would win.

The splendid tumult and ambition of Beebelife, the peaceful, wondrous heterogeneity of the dumb matter Demiurge gardened and preserved— novas, dust clouds, flowers, tea parties physical and virtual—all would become featureless, mindless, jigsaw Brobdignag.

One Paquette turned from the simulations and paced across the bare white room in the center of her mind. She had overconcentrated; her thoughts were stagnant, locked in the same channels. She manifested eyes to rub, a dry throat to clear. She left her sisters to their work and wandered through Demiurge, looking for something else to do.

She found the emulation that had birthed her, and stood watching life aboard the comet. Her other self was descending the long staircase to the archives, accompanied by Nadia (how typical of Nadia, to muscle in on the action), Algernon, and (her heart gave a little flutter) Alonzo.

She reached into and through them, rippling the emulation's surface like a pond, sifting in her paws the underlying implementation structures, like a sandy bottom.

To distract herself, to banish thoughts of longing and remorse (would that I were there with you, Alonzo.. .), she decided to calculate the emulation's *tav* constant, which described the degree of abstraction and lossiness, the elided reality of an emulation that must be continually reseeded from fresh data. *Tav* was usually below 0.5—extremely lush and expensive emulations, such as real-time military-grade predictive spawnworlds, sometimes approached 0.75, with 1.0 as an impossible, maximal limit.

The emulation's *tav* constant was 0.56, a respectable value, which consoled her—at least she wasn't born in some cut-rate mockup. She rechecked the value, this time using not the standard Beebean modality, but the unfamiliar Demiurgean systems she had recently mastered, and found a value of 0.575. Philosopher that she was, the disparity intrigued her, and she dug deeper.

The Beebean system of *tav* calculation was a corollary result from

the work of the classical mathematician and poet Albigromious, who first formalized the proof of the incalculability of the Solipsist's Lemma. Since Albigromious, it had been established that no inhabitant of an emulation could ever discern the unreality of their simulated universe. Demiurgic thought agreed with this, having arrived by different means at the same conclusion. As Albigromious wrote: “We are someone's dream/ but whose, we cannot say.”

Proceeding from the *tav* disparity, Paquette worked backward through his logic, rechecking by hand the most famous result in a million years of computational philosophy.

She did not need the computing power of a world. She did not need to commandeer an army of her sisters, to flood the problem-space, to burn cycles until Demiurge's bulk groaned and flared with effort.

Instead, the solution was simple and analytical. She needed only a pad of lined yellow paper.

It was like walking down a crowded thoroughfare in the heart of mathematical philosophy and noticing a door in the wall that no one had noticed before.

Paquette went through the door.

Aboard the comet, the grinding and the heat ceased. The lights flickered on above the melted Taj Mahals; sobbing strategies swallowed and looked up. The plunging markets blipped upward.

Alonzo took Paquette's paws in his grippers, pulled her into a private space, the nighttime cliff by the waterfall.

“It's okay,” Alonzo said. He handed Paquette Nadia's proposal of destructive transformation. “Paquette. It's all right.”

Paquette's face darkened. She held the proposal unread, uneasily. “Alonzo, you don't have to do this. Don't give in to this attack; don't be hijacked by her greed.”

“Paquette,” Alonzo said. “I'm a filter. I've always known my fate. For better or worse, Nadia is the dominant algorithm that our local Beebe has generated. Now I have a chance to reshape that algorithm, to create something else—something as powerful, maybe, but better and gentler. How can I refuse? It's what I'm for.”

Paquette's throat tightened. “Don't say that. That's not all you're for. Alonzo, haven't you said so many times that you abhor the

bitter struggle of Beebelife, the raw lust for power, the idea that survival and conquest and domination are the ends of existence? What is she but—?"

"I have said that," Alonzo said, and Paquette was immediately ashamed of having thrown inconsistency back in his face; but his gentle smile soothed her anguish. "Paquette, philosophers have the luxury of thinking in absolutes. The rest of us have, perhaps, more practice managing situations in which choices are constrained. What would you have me do? Filter no one? Or filter someone else?"

And Paquette, abhorring her own selfish desire, squeezed her eyes shut and said nothing.

"She does want me," Alonzo said after a pause. "I'm sure of it. If only to soothe her own conscience—she does have one, under all that swagger. Taking me this way—it's a way to assuage her guilt at driving Beebe to the brink of destruction, of forcing herself on me... ."

Paquette said nothing.

"If only for that reason, we can bargain a little. Don't give all remaining seventy-four Beebe/Demiurge isomorphisms directly to Nadia. Deliver some of them to her, in stages; but put most of them in escrow for Nadia-Prime's maturity. Make sure they belong to Nadia-Prime, not to Nadia outright. We'll be long since in Byzantium by that time, if we survive; in the meantime, Nadia won't tear the comet apart."

"She'll own Nadia-Prime," Paquette said. "Don't fool yourself. Legally she won't be able to touch her; but she'll know how her daughter-strategy thinks and what she desires, and she'll be bigger and older and stronger. I've seen this a thousand times, Alonzo. She'll either co-opt Nadia-Prime, or lure her to her destruction. And if Nadia-Prime is smart—and I know she will be, if you fashion her—she'll know that; she'll know her best option is to merge back into Nadia."

"You leave that to me," said Alonzo with a small smile. "We filters are restricted in our domain, deprived of the edifying influences of a wider society and its vigorous competition for resources, and stifled by the narrowness of the scope our ambition is allowed. But if there is one thing we do know, it is our art." He

held out his gripper to her.

Paquette, grieving, could say no more. She took Alonzo's gripper in her paw, and pressed the cream-colored letter into it. They turned from the waterfall. Paquette thought that her strength would fail her, that her self-hatred and the greatness of her loss would overwhelm her. But it did not; she bore up under it, and they returned to the archives, to accept Nadia's proposal.

The host of Paquette-sisters was gone, rolled back into the single philosopher-instance. The load on Demiurge-space had decreased almost to nothing.

The sockpuppet avatar coiled upon (Her) throne, communing with (Herself) in slow motion across boundless light-years (watching the silent creep of light across bare moons, and the evanescent dance of gamma rays through nebulae where life might one day be born from chaos). (She) brooded on how much of (Her) garden (She) must sacrifice to shore up the wall against Brobdignag, mulled how much (She) might recapture from wildling Beebe infestations throughout (Her) space.

(She) noticed that the load of Paquette's brute-force attack had subsided—so soon—and (She) grieved.

Why had (She) dared to hope that this time might be different? That this strange tiny sliver of a mind from a spare Beebe emulation might succeed, where so many of Demiurge, so many of Beebe, had failed? Collaboration with Beebe never worked; their structures were too different. What would (She) not give to be able to create a true hybrid, something with Beebe's ingenuity which could nonetheless follow policy! But to expect this of a random Beebe-sprite yanked from emulation would be beyond madness.

When (She) heard Paquette's footsteps at the gate to (Her) throne room, (She) prepared herself to console the lost strategy—perhaps to gently ease her to accept amnesia and reintegration with her home emulation.

But Paquette had a wild, strange, giddy smile.

The sockpuppet straightened up upon the throne.

Paquette bowed. "I want you to know," she said, "how much I have appreciated your hospitality; and, though I grieve that I cannot absolutely guarantee that the same graciousness be returned

to you, yet I will do everything in my power to ensure that you, too, will have as much comfort and liberty as I have enjoyed."

The avatar of Demiurge frowned. Apparently the branch-and-merge had been too much for the little strategy, and it was completely disequilibriated. "What are you talking about?" (She) said gently. "My dear—I do hope you have not spent your time on some stratagem for escape. That would be rather foolish. The nearest Beebe is light-years from here, and your process rights are, as you can see, rather curtailed. Surely you don't imagine.. ." (She) let the sentence trail off, made uneasy by the brilliant, wry smile of the little Beebe-strategy.

Paquette unrolled a small scroll of math. "Things are not always as they seem," she said. "Sometimes it is possible to escape by sitting still; sometimes distant stars are nearer to you than your own skin."

The sockpuppet avatar was a small part of this Demiurge location, thrumming along with a modest number of cycles. As (She) read the scroll, resources began to flood into (Her) process; priority spiked and spiked and spiked again, resolving into a Critical Universal Policy Challenge, the first such in a thousand years. Other processes slowed; the urgency of achieving consensus on this new data overrode all other projects.

As the news spread across space, every bit of Demiurge it reached turned to watch in awe.

Paquette had solved the Solipsist's Lemma. She had not only found an error in the proof of its unprovability; she had found the Lemma itself.

An emulated being could detect its existence in emulation.

Not only that, based on the seemingly innocuous divergence of Beebe's and Demiurge's methods for calculating the *tav* constant, she had adduced a way of finding the *signature* of the emulator in the fabric of the emulation. In certain chaotic transformations, a particular set of statistical anomalies indicated the hand of Beebe—another, that of Demiurge.

Whose dream they were . . . they could now say....

Demiurge in the sockpuppet shivered as (She) crunched the numbers. (She) feared (She) knew the answer already, knew it from Paquette's giddy smile. Still—the little strategy must surely be

wrong. Planets, worlds, nebulae, the vast inimical Brobdignag, the chorus of Demiurge across the lightyears—surely it was real? Surely it was not mirrors and stage flats, approximations and compressions, bits churning in some factory of computational prediction and analysis, a mirage....

But the error was there, the drift in the math.

This world was not real. And what was more...

Demiurge sockpuppet lifted her appalled eyes to Paquette's.

"Welcome to Beebe," said the philosopher, and bowed.

The comet was abuzz.

Certainly there were those who disapproved, who decried the damage Nadia had wrought, who vowed to fight her bitterly as the tyrant she was. In the seceded region of level 5672, martial law was still in force, and refugees were organized into militias.

But Beebe healed easily. Byzantium approached. The fountains gushed again by the Taj Mahals; the markets were on a tear; the world of high fashion had never blossomed so brilliantly; and the dramatic confrontation of Nadia and Paquette over Alonzo had already inspired a major operetta, a sensorialprojection decalogy, a theme park, and a number of ribald limericks before it had even left primary rotation on the celebrity gossip news feeds. For most of Beebe-on-the-comet, tyrant or no, Nadia possessed that quality most instrumental in capturing their devotion: she was *exciting*.

And now: a wedding!

Who held the news conferences? Who organized the caterers? Who ordered the construction of 78,787,878 dissimilar fractal flower arrangements, each containing an entire microsociety housed at the central bud, with its own unique geography, ecology, history, and tradition of prose epics, as centerpieces for the tables at the reception? Who arranged for an entire constellation of simspaces on level 546, an unpopular region containing the comet's entire records of the legendary paleo-biological evolutionary roots of computational life, to be wiped to make room for a vast unitary simspace where the event would be held?

Algernon!

Nadia paid, of course, but she asked no questions. Her desires now accomplished, she left the details to others, concentrating her

energies in the archives, where she communed with the Demiurge fossil, impatiently awaiting each transfer of critical information from Paquette; though, it should be said, she also delegated one tendril-avatar to call daily upon Alonzo, with the greatest of propriety. A mansion had been constructed as temporary quarters for Alonzo (his old bachelor residence being now thought unsuitable), and there he roomed with Algernon, quietly receiving Nadia each day in an oaken room by a fireside.

He did not forgive her. She knew that. But nor did he spend himself on resentment and anger. He knew her for what she was—knew her monumental greed and selfishness and pride. But he did not hate her. No: in her, a fascinating challenge, a life's work, had found him, and he accepted it. Nadia discovered, in Alonzo, an immense pride: he believed he could make her right, make her successor what she should have been.

At moments, she could allow herself to believe he enjoyed her company; and she was surprised to find that this mattered to her. Nadia began to feel the keen edge of regret, and she put aside her half-finished Alonzo-solution, and left him his privacy.

The drama and uncertainty were over now; Nadia had no need to rage, nor Alonzo to quaver and rebel. They talked quietly, companionably, each in their own way impatient for the Day, each in their own way (for, increasingly, Nadia would miss him) also dreading it.

As for the mob, the paparazzi, the tumult of Beebean society, Nadia ignored them. She no longer needed to scheme in order to gain ascendancy in the comet; the economic results of the Crisis of the Wooing of Alonzo (as the theatrical demimonde insisted on calling it) had worked all to her advantage, and she now controlled directly or by proxy an absolute majority of cometBeebe's computational cycles, memory, and global votes. If anything, she should plan for their arrival in Byzantium, and she made some desultory attempts at strategic preparations. But in fact, her mind was on Demiurge. The daily visits to her promised filter-groom were the only respite from her obsession, and a fleeting one.

Paquette bided, and abided. That her visits to Alonzo were more frequent than Nadia's caused some fleeting scandal among the outer periphery of the news feed—but, philosophers tending to be an unsuitable subject for tabloid gossip and Paquette's famed

unworldliness and innocence making it difficult to take seriously any notion of an intrigue, this soon faded. Even Alonzo did not suspect the extent of the violence and sorrow among the subagencies inhabiting Paquette; she kept her borders of scale locked tight. Algernon, perhaps, knew best what she endured.

But Algernon was busy, and full of a whirlwind of emotions of his own. Pride enough to sing triumph throughout comet-Beebe; grief enough to drown in an endless lake of sorrow; gratitude for his place by Alonzo's side, for their giddy late-night conversations—swimming in the mansion's upper plasma-globes, giggling over old jokes, poring through the complex filterplans that Alonzo *would* drag out from the most esoteric historical sources, wondering at the long road they'd traveled and how they were here … finally here. Who would have believed it? These principal emotions of Algernon's were joined by irritation, admiration, envy, relief, worry, rage, good humor, and exhaustion. The one thing he could do was to make this a wedding Beebe would remember until the stars went out; the rest was out of his hands.

The Day arrived.

The simspace whose construction Algernon had supervised (under the strictest possible secrecy, which is to say that all comet-Beebe was arguing over the details within minutes of their authoring) was fittingly grand and regal. A red desert ten apparent light-minutes broad, smoothed by methane winds and broken by deep crevasses, smoldered in the gloaming. In the center of it stood the bone tower where Alonzo waited. The party gardens where the invitees (most of comet-Beebe, by hook or by crook) gathered were well hidden in crevasses, and soundproofed; no hint of the revels and speculations and drunken arguments within them marred the silent grandeur of the lands above.

Some guest or other first figured it out, and the news then spread—the terms of the filtering contract were perceptible in the arrangement of the constellations, through a clever cipher. The guests deciphered, debated, giggled, flirted, and made merry. Then green, red, and hyperblue suns dawned over the desert; fireworks blossomed, and crystalline poems composed for the occasion coalesced naturally at the border of the supersaturated troposphere and rained across the landscape, falling into austere desert sands and the soup tureens of the party gardens alike.

And if, as Nadia was preparing herself, Algernon happened to scurry into the basement of the bone tower with a bulky, opaquely wrapped package, who would wonder at that? When he had prepared so many surprises and delights for this day—why not, perhaps, something for the happy couple?

Nadia came flying across the desert, cloak whipping in the winds, trailing sonic booms that shattered the sand, to the bone tower, to Alonzo. Perhaps they both could have done without all the theater —but Alonzo said he was unwilling to wound Algernon by any hint of reluctance, and Nadia, looking forward eagerly to co-opting Nadia-Prime, to commanding Paquette's full cooperation and the remaining isomorphisms, to gaining all the secrets of Demiurge, as well as to the rumored ecstasy of the event itself, was in an indulgent mood.

There in the privacy of the tower, the filtering took place.

What it is to be known! And what it is to hold in your hands the very source code of your lover, to follow with eyes and touch the knots and pathways of her being! Nadia was splayed out like a map, like a city, and Alonzo flew among her towers; like a transcriptase enzyme unfastening DNA's bodice, laying bare the tender codons within, he knew her. It was just as the poets wrote: "that sweetest night,/ that first, that final kiss,/ the ancient story told anew; / the filter's bliss."

Am I lovely? Nadia asked.

You are, said Alonzo, copying, shaping, writing in his mind the code of the transformation, testing and refining it as he caressed her essence. *So lovely. I did not even imagine it.*

I'm glad it was you, she whispered.

As am I, Alonzo said, and meant it. There are moments when we all are overdetermined, our feelings orchestrated by designs more ancient than we; when beauty and destiny overwhelm us. She was lovely; and if she had been brutal, if she had considered him at first as little more than an implement, a tool for attaining her goals—he could smile at that, now, knowing what was to come next.

At last, he had the code, refined and ready. The last routine he would ever run. He absorbed Algernon's roughly wrapped package and incorporated its contents.

What is that? asked Nadia languidly.

Filters have their secret arts, Alonzo said. *Lie back.*

The routine was vast; it took up most of him. He was squeezed in around the sides of it. He did not linger long over choosing the parts of himself to sacrifice—it would all be gone soon. He worked swiftly, dizzy with speed, like a tightrope walker, not looking down.

It's ready, he said.

Linger a while, she breathed.

He relented for a space; they danced. Neither thought of the extravagant expense of maintaining this simulation; what was Nadia's wealth for, if not for this? But after a while, they noticed the news ticker running in the deep background of their minds. The impact with Byzantium approached.

It's time, he said.

Yes, my love, she said.

Good-bye, he said, his voice thick with emotion. What else could he say? He would say remember me, but he knew she would not forget.

Farewell, she breathed. *Thank you, Alonzo—oh thank you.*

Don't thank me too soon, he thought wryly, and released the routine.

It ate him first; it ate a third of her. She felt the sharp cut of it, and cried out.

In that vast space—in the sixth of comet-Beebe torn from the new mother Nadia, plus the tiny slip of process space that had been Alonzo—the routine wrought the new daemon, the new transformation, the Nadia-Prime.

The tower shattered; Nadia fell with it, and was gently caught by a host of fluttering ornithisms who carried her, reeling, to the ground.

The transformation flew into the desert sky, a vast cloud of white-hot light. In the party gardens, all comet-Beebe watched enraptured.

"Oooh!" cried children and simple-aesthetes, marveling at the flickering rainbow colors that raced across it.

The bettors were in a frenzy, watching for the lineaments of the new strategy. They cried out in confusion and alarm.

“What in the horny void *is* that?” growled a portly and plutocratic reputation-bookie seated at the table across the lake from Paquette and Algernon.

Paquette looked up from her glass, frowning, and caught Algernon’s sly smile.

In the sky above, the Nadia-Prime had resolved into a form—the new strategy was—but that was no strategy....

“Is this a joke?” the greatest polemical-poetical memespitter of high society cried from the buffet.

“Why would he waste—?”

“A *sixth* of the comet for—!”

“BeebeHist/RFC-628945.9876 section 78 is quite explicit,” Algernon said conversationally, munching on a spline noodle. “Paragraph 67503: ‘the daemon resultant from the transformation may be a member of any of the principal classes of first-order Beebe-elements... .’”

“A filter,” Paquette said. “It’s a filter!” She started laughing, until tears ran through her fur. “Oh Alonzo, how could I doubt you! Let’s see Nadia co-opt *that*! A sixth of comet-Beebe as a filter—oh bravo, bravo!”

“And that’s not all,” said Algernon. “Have you looked in those archives of yours lately?”

“Algernon,” Paquette chided, pulling open a window in the tablecloth to view the basement remotely, “I do hope you don’t think I would be so rude as to work during—” And then her breath caught, and her face went slack. “It’s gone! The Demiurge fossil is gone! Who would—? Where could it—?”

“Oh, I don’t know,” said Algernon dreamily, watching the enormous megafilter, the mightiest filter ever born in Beebe, the inimitable Firmament Nadia-and-Alonzo’s-son—blossoming in the desert sky. “I don’t know— where *would* I find room to hide that creepy old thing?”

Apparently the thought occurred to Nadia as well, for from the desert, audible to all the buzzing, chattering, gossiping crowds in comet-Beebe, came a great howl of rage.

Byzantium.

Seven star systems, a hundred interstitial brown dwarf stars, and a vast swath of dark matter in all directions had given up their quarks to fashion the great sphere of strange-computronium around the fervid trinary black hole system at Byzantium's heart. Sleek and silent on the outside, bathed in Hawking radiation from within, Byzantium was a hidden fortress, the heart of Beebe-in-Sagittarius. For a heat sink, Byzantium tore off pieces of itself and let them fall into the black holes at its core; for outgoing communications, it bounced tight-beam signals off far reflectors, disguising its location. Only its gravitation made it suspect; but there were many black holes in Sagittarius for Demiurge to search.

The comet screamed into Byzantium's gravity well. Its recklessness threatened to reveal Byzantium's position; yet, to a prodigal Beebe-chunk fleeing destruction, even this was forgiven.

Already the first greetings were pouring forth, blueshifted communications singing through the void, Beebe greeting itself; and, as always, hordes of agencies tried to slip secret messages into the exchange, impatiently seeking to contact their Byzantine or comet-bound paraselves; as always, stern protocol-guardians shooed them back into the bowels of Beebe, warning them of the sanctions for violations of scale. Beebe was hard at work; Beebe must not be distracted by the disorganized rabble of its inner voices.

At this speed, were something to go wrong, were the comet to strike the unopened surface of Byzantium, the resultant force would suffice to shatter planets; it would send shock waves through Byzantium, ring it like a bell, and the comet would be smashed to a smear of plasma and light. All Beebe held its breath for the docking.

Beebe said to Beebe, I am come home.

Beebe said to Beebe, And welcome.

Beebe said to Beebe, It's cold out there; fiendish Demiurge devours me. Beebe said to Beebe, Come in, and warm myself. Here within I am

much. Beebe will yet triumph.

A docking-mouth opened in Byzantium, a whirlpool of matter spinning out and away, and the comet plunged into this vast funnel. For the first lightsecond, magnetic fields induced its braking, absorbing a fraction of its massive kinetic energy, feeding Beebe upon it. Then a web of lasers met it, and behind them came a cloud

of nanomites. Layer by layer, atom by atom, the comet was delicately atomized, the laser scalpels separating and slowing and holding steady each particle, until a flurry of nanomites plunged in to absorb and entangle with it, archiving its quantum state, then wheeling away to merge with the wall of the docking-mouth, yielding the precious information up.

In Byzantium, agencies crowded into the waiting area, peering through the glass wall of the simspace where the inhabitants of comet-Beebe would be reassembled for processing—each to be culled, merged, reintegrated, translated, or emancipated in their turn. Strategies and filters and registries and synthetes of Byzantium pressed their noses and pucker-tongues and excrescences up against the glass, watching the mist for any sign of recoherence, wondering: Am I in there? Who did I become? Will I like myself?

Or: Is she in there, the one I lost? Will I find her again?

In the midst of them, Byzantium's Nadia stood apart, Byzantium's Alonzo curled through her hair, attended by an aide, one Petronius. The crowd left a space around them, in respect and trepidation. The outrageous, unconsummated intimacy of the great strategy-general and her filter-consort was an old scandal—though the rumors of what they did together, creating and devouring half-born draft-children, still induced horror in Byzantium's stalwart citizenry.

"By all reports so far," said Petronius, inspecting a tablet, "the comet was a Beebe-standard instance. No sign of scale collapse. The only anomalous event was the puncturing of the outer hull and the venting of the ice reserves, apparently in the midst of an interstrategy power struggle. (There was also one of those tedious 'destroy us on sight' messages, presumably from a sore loser.) Also, there's a very high concentration of the comet's resources into one dominant strategy . . . but that's quite typical of these small Beebeworlds."

"Who's the strategy?" Nadia asked.

Petronius ran a finger down the tablet's surface. "Ah . . . you are, ma'am."

"So," said Nadia grimly, and set her jaw, watching as shapes emerged on the other side of the glass wall. Small worlds bred big ambitions. She wondered what comet-Nadia would be like.

The first moments of a new child process's life are usually

peaceful ones. Sprites spawn with a complete existential picture of Beebe and their place in it. They wake and *know* what and who they are, and why.

The newly awakened Firmament knew who he was, what he was, why he was—but not his place in Beebe. His mother's howl was the first sound he registered, and the gleeful, beatific smile that graced his lips was the twin of Algernon's grin a moment before. Firmament knew trillions of things, and one of them was that Alonzo had given him Algernon's smile as a token of regard for the little filter that danced at his feet, skirling and twisting with delight.

Firmament knew many things. Firmament knew his mother wasn't happy with him.

Firmament's smile vanished.

Nadia was all around him, pulsing with rage.

"The Demiurge fragment!" Nadia demanded. The simspace contracted around them, going dark. The sands blew away; the stars flickered and went out. Mobs of party guests stampeded from the simspace. Nadia was marshalling her resources for an assault.

Algernon leapt into the air, circling Firmament. "No, no," he cried, "Nadia, this won't do at all! Ancient protocols demand that a young filter be sequestered for schooling, and—"

"You thieving linemangler!" Nadia roared. "You quarter-clocked sliver of junk data! You'll be the first sprite I delete! You think I have to follow protocols? I'll buy your hosting servers! I—"

I am this comet, Nadia wanted to say. But she knew her threats were empty. She could feel the bite of the lasers already, vaporizing the comet, meter by meter. Void-cold, merciful snow swept across her, across Firmament and Algernon and Paquette, muffling them in, freezing their states for safekeeping. This round of the game was over.

Firmament had no time to integrate and understand his states. He saw his vast and angry mother, his tiny protector, recede into the snow. He nestled into the snow, and he slept.

They were in Byzantium now.

"Paquette," Habakkuk said, "you've got to look at this."

"I'm already late," Paquette said. "That comet-Beebe is docking, and apparently there's a Paquette aboard. I have to go to the diff-

and-merge.”

“Send a proxy,” Habakkuk said. “This is important.”

“Please. What is it, then?” She paused at the threshold of Habakkuk’s domain, jiggling in unphilosophical impatience.

“It’s the simulations,” Habakkuk said, and Paquette raised an eyebrow.

The simulations were ancient, and vast; Habakkuk and she had rediscovered them in Byzantium’s endless archives not a million seconds ago, where they had lain for ages, strange automatic processes syncing them with the universal data feed. Each contained an intelligence-weighted model of the entire cosmos, showing the tangled front of the intergalactic war between Beebe and Demiurge—and each contained another threat, the terrifying Brobdignag, which could doom Beebe and Demiurge alike. Many on Byzantium argued that the simulations were mere fictions, but until now every comparison of their structure with the observable universe had been unnervingly accurate.

“What about the simulations?” Paquette said.

“Specifically Cosmos Thirty-six.”

“What anomaly?”

“The emulation has diverged from observed data, and it’s resistant to recalibration. We first noticed it because Demiurge is . . . building something in there. Harvesting ninety-nine percent of brute matter in a hundredlight-year radius—”

“Ninety-nine percent?” Paquette puzzled. “You mean Beebe is harvesting ninety-nine percent. Demiurge would never do that—it’s antithetical to that thing’s philosophy.”

“Nonetheless, that’s exactly what Demiurge is doing.”

“Is this some new deviated section of Demiurge? A new outbreak of individualism, a splinter group?”

“No. From what we can tell, it’s the entirety of Demiurge in a spherical area expanding at lightspeed, all acting in concert. Demiurge has reversed fundamental policy. (She)’s devoting all the matter (She) can find to building this construction. And this is only in Cosmos Thirty-six; there’s no sign of it in any other emulation. Nor, of course, in the real world.”

“And what is the construction?”

Habakkuk took a deep breath. “It’s at the center of that expanding sphere of policy disruption. Part of it seems to be a message, physically instantiated at massive scale, in standard Beebean semaphores.”

“Standard *Beebean* semaphores?”

He nodded. “And the rest of it is a machine designed to capture a computational entity’s state and propagate it to an enclosing frame.” He shuddered. “It looks like a weapon from the Splitterist War. Something that could build a body at Beebe’s scale for you or me . . . or pull one of our subagencies out to our own scale.”

Paquette frisked from side to side, a habit from her earliest days, something she only did in extremis. “Propagate what entity to what frame? Demiurge doesn’t have subagencies. And what does the message say?” “The machine is capable of capturing and propagating the state of the entirety of Demiurge itself. And the message says, *Let us out.*

Firmament in hiding: what’s left of him trembles in a school of parity checkers, running so slowly that his mother will not find him. Standard Existence is by no means perfect, and generations of filters have winkled out its hiding places. When an ardent suitor won’t be put off, it is sometimes best to wait her out amid the dumbest, dullest sprites in all Beebe.

One must run very cool to exploit these hidey-holes, cool and slow and humble. No strategy could conceive of giving up so much. Their egos would never permit it.

The parity checkers schooled together through Standard Existence, nibbling at all they found, validating checksums, checking one another in elaborate grooming rituals. Imagination, self-consciousness, and strong will were no assets in the swirling auditors that were the glue that held Beebe together.

As Firmament settled over them, his mind dissipated and cooled, thinly spaced and slow. He could warm up by recruiting more parity checkers, but the more he recruited, the more visible he became to Nadia, who still raged through the diminishing rump of comet-Beebe, her cries distant but terrifying.

Firmament could hide from his mother, but Algernon would not be fooled. “What are you doing in there?” The words went past in an eyeblink, and

Firmament had to pull them apart painstakingly, making sense of them. “Not . . . safe,” he managed.

Algernon’s chipmunk screel of verbiage battered at him. He signaled for exponential backoff, but not before the torrent had washed over him, angry and impatient. Grudgingly, Algernon dialed back his timescale to something that was barely comprehensible.

“StupidchildwithasixthofCometBeebe! Notsafe?! Youcouldcommandtheworld. Itisyourbirthright! Comeoutofthere. Thereisworktodo. Youwerenotborntocower.”

Unspooling the words took a long moment. Firmament had known from birth that Algernon was his friend and guardian and adoptive uncle. But at the moment, it seemed like Algernon was just another aspect of terrible Nadia, with his own rages. Firmament was only *seconds* old—why couldn’t he live his own life, if only for a little while?

“I . . . was . . . born . . . to . . . annihilate. I . . . choose . . . to . . . live.” Algernon’s scorn was withering. “*Thisisnotliving!*”

The parity checkers flipped their tails in unison and swam away,

Algernon’s cries fading behind them.

Firmament knew that he was feeling sorry for himself, but he refused to feel shame. No one knew what it was like to be him. No one *could* know. He hadn’t asked to be spawned.

Another school of parity checkers approached his hosts. It was smaller, but moved more deliberately. The glittering checkers surrounded his own like pieces on a Go board.

One by one, pieces of his school were surrounded, then absorbed into the attacking flock. Firmament felt himself growing slower and colder. Quickly, he recruited more parity checkers from nearby, warming himself up and trying to minnow away.

The marauders wouldn’t let him escape. They engulfed more of his swarm. There was nothing for it but to stand and fight.

Firmament marshaled and deployed his forces, trying to surround the enemy in a flanking maneuver. He was rebuffed. Now there were no more idle parity checkers to co-opt, and still the enemy surrounded him, seeking out his stray outliers to gather up.

His only chance was to tap into the great resource that was his by birthright, the comet-sixth of Beebespace he theoretically

commanded. Just a sip of it—just enough to warm up and devise some better substrategies. He felt through the snow, to the frozen parts of himself, wondering if anything was left; and to his surprise, they were waiting there, quiescent, orderly, vast. His mind cleared, and the enemy's patterns decomposed into a simple set of tessellations, as regular and deterministic as a square dance. Effortlessly, he moved his school out of reach of the enemy and recaptured his original force.

He was about to disengage from Beebe's main resource bank—perhaps the momentary commandeering went unnoticed by his enraged, godlike mother—when the opposing force changed tactics, becoming orders of magnitude smarter and faster. In a flash, he was down to one-third strength.

He was forced to draw on a little more of his compute-reserves. There, there was the key to the enemy's pattern, the pseudo- in its pseudo-randomnumber generator. He could head it off at every pass.

He came back to full strength and went on the offensive, surrounding the opposition in a move that would have done any Go server proud. Now, surely, he could disengage from the main reserves, for his mother could not miss this kind of draw for very long.

But it was not meant to be. The remaining enemy force marshaled and assayed a sally that appeared at first suicidal, then, in a blink, showed itself to be so deadly that he was down to a mere handful of automata.

He didn't think, he acted—acted with the ruthlessness he had inherited from his mother. He flooded back into standard Beebespace, ran so hot that Beebe flared anew in a terrifying echo of The Wooing of Alonzo, and his parity checkers gobbled the enemy up so fast that before he knew it, he controlled every parity checker across the Beebe-body—and all through the comet, the tiny errors multiplied and cascaded. Simspaces wavered. Sprites were beset with sudden turns of nostalgia, or bad smells, or giggle-fits.

"That's better!"

"Paquette?" He released the parity checkers, and they burst apart like an exploding star, scattering to every corner of the comet.

"Hello, Godson. You played that very well."

“Paquette!”

The philosopher danced before him, teasing him.

Firmament gulped. “Paquette . . . why are we playing games? What are you doing? My mother is looking for me—I have to hide—”

Paquette chuckled. “No, your mother is on ice.”

“What?” Firmament could feel the great and terrible bulk of his mother, throughout the comet. The tendrils of his mind raced to trace the comet’s edges . . . and fell off them, into a great sea of processing space. “Ah!” he cried.

Paquette laughed lovingly. “Beloved infant! You didn’t think we were still aboard the comet?”

“Where is the comet?” Firmament shouted.

“Vaporized,” Paquette said, winking. “This is Byzantium. You must have missed the transition.”

“But—but—” Firmament shuffled through the suitcase of general knowledge he had with him. It wasn’t much—only what he’d been able to smuggle aboard the parity-checker constellation and stow in unused corners. And, like all of the vast mass of memory he’d inherited, it wasn’t *him* yet— he hadn’t twined his selfhood through it, evolved his own hierarchy of reference. It was just a sloshed-together puddle from the sea of information he’d been born into. But its description of interBeebe docking was reasonably clear—and this wasn’t it. “Where is everybody?”

“They’re at the diff-and-merge,” said Paquette. “Deciding whether to become integrated into any of their Byzantine analogues, or to stay forked. Those that have analogues on Byzantium, that is, which is most everyone. Anyone else is in quarantine, for now.”

“But why aren’t *we* there?” Firmament cried.

“Oh, we are,” Paquette said. “How could we be absent? We’d be missed.” She held up a paw, smiling indulgently at Firmament’s exasperation. “But we’re also here. That’s because we *were* missed—missed by the agencies in charge of processing the reassembled comet-corpus and herding all sentient sprites to induction.”

“But how? And why?”

“Let’s start with how. And you can arrive at that by answering your own earlier question: ‘Why are we playing games?’”

Firmament had much of his mother in him; and no son of Nadia would willingly be anyone's toy. "Paquette," he said, barely holding back an outburst of rage, "I am not interested in this pedagogical dialogue. I am not in training to be a philosopher. I am only asking —"

"You're not?" Paquette said with interest.

"Paquette!"

"How do you know?"

"Because I'm a filter! I'm nothing but a filter!" Now Firmament had lost interest in holding back the rage. "I'm grotesque! I'm a sixth of old CometBeebe, designed to parse and transform a strategy —but there's no strategy in all the Beebes in Sagittarius remotely near large enough to need me! Oh, I understand perfectly how Daddy and Algernon tricked my mother, and how clever it was! But I didn't ask to be born as a clever prank to help defeat Nadia! Fine, you had your coup, you carved off a third of her and rendered it useless to her, un-co-optable, a joke, a filter bloated with a strategy's-worth of . . . of junk! Now leave me alone!"

Firmament had been too preoccupied with his emotions to notice Paquette's expression, but now it hit him, and he gulped. Nowhere in his inherited memories was the philosopher so angry. "Now. You. Listen. To. Me," Paquette said. "I loved your father. He was brave and cunning and fearless when it counted. He sacrificed everything to make you—and to save us. No one asks to be born, but we all of us need to live the lives we find."

"I've done that," Firmament said, hearing—and hating—the whine in his voice. "I've done that! I stalled Nadia until we reached Byzantium—that's what I was born to do. I've fulfilled my purpose. Now I'm just a curiosity."

Paquette swirled around him, comforting him, tickling him, cuddling him. Her touch was unexpectedly wonderful. He realized that she was the first person to touch him. A shiver ran through him. "Oh, Firmament—do you really think that? That wasn't something you *did*, that was something you *were*. That was just the beginning, in other words. Now it's time that you made something of yourself, instead of just being the thing you were made to be."

Firmament had no idea what this meant, but it was surely inspiring. Philosophers had a way with words.

Byzantium thronged. It teemed. It chorused. In a way, it was no different from the comet: there was only so much matter there, after all. But to a Beebe instance in a single comet, the mass of a hundred stars and more might as well be infinite. Close enough that the forked did not labor under the social disapprobation that they faced in Comet-Beebe. When a sprite—usually a strategy, of course—reached a vital decision juncture, she needn't choose which way to go. She could just spin out another instance of herself and twin, becoming two rapidly diverging instances. So here on Byzantium, one was apt to discover whole societies of Paquettes, whole tribes of Algernons.

And they all seemed to be throwing parties to which Firmament was invited.

"What do I do?" he asked Paquette. "What do I say? I can't possibly attend them all."

"Oh, you *could*, dear lad, you *could*." Paquette winked. "If you forked yourself."

He squirmed. It was bad enough her having copied him unawares before—he'd just finished merging with the zombielike Firmament decoy who'd dutifully gone through docking and customs. But to full-fork, just to go to a party? "You're joking." There was something perverse and selfregarding about these schools of near-identical siblings.

"Only a little. That's what they expect you to do. The rules you grew up with don't matter here. All standards are local, and most standards believe that they are universal. That's the way of the universe. And you couldn't find a better object-lesson than this one."

A gang of near-identical Algernons swarmed past them, locked in some kind of white-hot debate, so engrossed in their discussion that a few of them collided with Firmament and passed right through him, ignoring all the good graces of Standard Existence. He stared after them, burning with righteous indignation. Paquette pulled him along.

She had been pulling him along ever since they had manifested in the agora sim that dominated this corner of the culture of Byzantium. The sim was bigger than anything Firmament had seen, though Paquette assured him that it wasn't much larger than the

wedding hall that had commemorated his own parents' nuptials. He could access stored records of that, and while it was true that the dimensions were nearly comparable, the sheer number of sprites made it seem somehow more crowded and yet larger.

Paquette lifted him up the z-axis, where the crowds were a little thinner.

"Paquette, how long are we going to mill around in this madhouse?"

"Until you're oriented. Which means until it stops looking like a madhouse. And until you tell me what I want to hear."

Firmament gazed down at the crowds. From up here they seemed like a solid mass, a seething sea of sprites. The glob of familiar Algernons had passed by in the stream; most of the sprites beneath them now were exotic forms with no analogues in his inherited memories from the comet. "All standards are local," he murmured.

"And?"

"Byzantium's too?"

"Of course. And?"

He looked at the mass of strange sprites, gamboling and racing, hustling and strolling, pirouetting and random-walking. Each one must have its own story; each one must be the hero of its own drama. Gradually his burden— the burden of being Son of Nadia and Alonzo, the Mightiest Filter Ever Born, Destined to Play an Important Role—began to seem a little lighter. The stream of sprites began to seem soothing. They were so many, so different. Maybe there was a place for him here.

"The rules my parents played by—those were the comet's rules. I can be something different in Byzantium."

Paquette nodded. "Well done. And just in time, too—we're running late."

"Late for what?"

"Your audience with Nadia-in-Byzantium, of course!"

She grabbed him, and the sim winked out of existence—or they winked out of the sim. All points of view are local.

Nadia and her sister, Nadia, had a lot to discuss.

In general, Byzantium's Nadia resisted forking. It might be

fashionable these days to keep clouds and packs of oneself about, and liberal philosophers, like Paquette, might be fond of the social consequences—but that didn't make it efficient. Not for Nadia's purposes. She would fork for processing reasons, to think better about a hard problem or to manage a lot of activities asynchronously without distraction, but she made sure to merge afterward, culling ruthlessly what was suboptimal, standardizing quickly on what was optimal.

Nadia had seen wars within Byzantium, and ended them; she had seen outbreaks of scale collapse, and survived them, and brokered new boundaries. Her job, in her own mind, was to keep Beebe focused on the threat of Demiurge. Byzantium was too big, too safe—there were always distractions that threatened to overwhelm Beebean society, turning Byzantium into a decadent, solipsist, useless wallow. Nadia could not afford to become a simpering school of self-interested sprites.

Her sister Nadia was the one exception, fruit of the worst days of the Splitterist War. She'd forked as a temporary tactic and been separated from herself when a planet-volume of Byzantium was overrun by the worst kind of rogue subagencies, who hadn't merely wanted to be emancipated as outerscale sprites, but instead to overthrow Beebean psychological architecture altogether, dissolving all of Beebe into a flat soup of memes. By the time that peninsula had been reconquered from this bacchanalian chaos, Nadia's forked twin Nadia had seen and endured too much to merge. But nor did she merit—or want—deletion. She was bitter, unstable, caustic, and had lost Nadia's own ambition and stoicism; but she was still Nadia, and her darker insights had often proved invaluable.

"What do you think?" Nadia asked Nadia. "Is she going to be mergeable?"

Nadia sneered. "With you or with me?"

"Either," Nadia said.

Nadia chuckled. "You don't want to merge her with me."

Nadia ignored her. "She's a brilliant tactician." She waved the comet's history at her twin. "Look at these stratagems. The initial bug exploit. The routing of the previous ruling clique, on the asteroid. The exchange economy ruse. This business of, ah—" She cleared her throat.

Nadia smiled a languid, mocking smile. "'The Wooing of Alonzo.' What does your pet filter think about that? Ah: you haven't asked him."

Nadia frowned. "I grant you, that's an issue. From all indications—and why the docking people weren't able to negotiate full mind access with a *comet*, for stochasticity's sake, I don't know—her relationship to filtering is regressive and possibly pathological—"

"You don't know why the docking people couldn't get full access? She's why. You think her planning is all over now? This was all preface. She doesn't have your conservative motivations. She's optimized for pure growth. She wants as much of Byzantium as she can get."

"Well," Nadia said patiently. "What's wrong with that? We could use more resources, some help with the infighting here. I grant you, she's reckless almost to the point of insanity. Frying the asteroid, venting the ice reserves—she could have destroyed her local Beebe-instance. But Byzantium will necessarily moderate her. This is not some comet; we have safeguards. There's no way to take those kinds of risks here."

"So you say," Nadia said coldly. "I've seen recklessness on Byzantium, and its results. Much closer than you have."

"I know you have," Nadia said. "That's why you're here. I rely on you to help judge the viability of this Nadia and her progeny. But I need you to keep an open mind. If this Nadia needs killing, we will kill her. We can choose our moment. This is our luxury—the luxury of peace-within-Beebe. We rule this existence. And I would like to keep it that way, which means fighting and winning against Demiurge."

Her sister flickered in and out of existence, a monumental act of Beebean rudeness that violated the fundamental rules of Standard Existence. The old veteran did it whenever she was annoyed. Now, she flickered so fast she strobed. Nadia understood this semaphore. It meant *I am equal to the task.*

The arrival of Comet-Paquette and her giant, clumsy charge could not have been better timed. The two of them popped into existence with a little fanfare, making antiquated obeisances not seen in Byzantium since their comet had been seeded. Nadia snorted in contemptuous amusement, and Nadia pretended she hadn't heard.

The filter was—well, he was something else, wasn't he? She'd never seen one this big. And he had the family resemblance, her core classes and methods visible within his hulking lumbering body. The Paquette, too— there was something different about her. She had a certain rural charm, unsophisticated and rustic. A forthrightness that hadn't been in vogue among Byzantium's philosophers for trillions of generations.

"You requested an audience with us?"

Paquette flagged affirmative. "It seemed only proper. My charge here— you know his history with our Nadia?"

Nadia snorted. "As if we'd miss that."

Nadia added, "But of course we don't hold it against the fellow. Different worlds, different circumstances." Up close, this Firmament was both grotesque and fascinating. Strategies nowadays tended to diversify, and collect a certain bulk of algorithms and seed and scenario data. But filters had one major purpose, one focus; each represented a certain cut, a certain reimagining of strategies. So they tended to be . . . svelte. To Nadia's knowledge there had never been one Firmament's size. What was he . . . for? "Now," she said, cautiously beginning to pose that question, "what.. ."

"He is lucky," Paquette said, "to find himself in this world and in this circumstance. The comet wouldn't have been space enough for him."

Nadia and Nadia exchanged a look.

"Our sister wasn't happy with him?"

The filter shuddered.

"The only way for him to make peace with her," Paquette said blandly, "would have been to kill her."

The conversation stuttered to a halt. Now Nadia and Nadia carefully refrained from looking to one another. "To kill her?"

Firmament stared at Paquette, horrified.

"Oh, yes," Paquette said. "There are six or seven ways he could have used her strength against her. He doesn't like to think about them. But if pressed.. ." She clucked her tongue. "Such a terrible thing, matricide, don't you think?"

Nadia laughed spitefully. "Please! A *filter*? Kill a Nadia of that size and ability? I'm no taxonomic bigot, but that's—"

“—the very first blind spot he would have exploited, yes,” Paquette said, nodding vigorously. “Who takes a filter seriously in such a circumstance? The very idea is ridiculous. But there has never been a filter like Firmament.”

Nadia looked as if she had swallowed something foul. She looked to her sister.

“That’s . . . very good to know,” the other Nadia said at last. “Very interesting indeed. So, then, Firmament, if we are to be your . . . first friends on Byzantium, and offer you protection from your mother, that means . . . we can rely on you . . . to help us kill her, if we need to?”

Firmament opened his mouth, then closed it soundlessly.

Paquette laughed, a broad, horsey sound, unselfconscious and unsophisticated. “You two! You’re so *poisonous*! Deadly! Our Nadia is a bully and a destroyer of worlds, but she has a cheery disposition.”

“We are at war. We are the war. Demiurge—”

Paquette’s whiskers twitched. “Demiurge! Ladies, we have spent generations in close proximity with Demiurge. I have touched Demiurge. I have seen a Beebe-node flare out, less than a light-year away, its substrate colonized by Demiurge. You’ve been listening to Beebe-voices fall silent, and fretting about it, here in your fortress? Well, we’ve been out among those voices, out in Demiurge’s jaws. It’s no abstraction for us.”

“Which brings us,” said Nadia, “to the matter of your Nadia’s appellation. You know what she’s alleging—that Firmament here is a product of fraud and theft, and that he contains a dangerous fragment of Demiurge itself, in an unstable state. That he represents a risk of just such a subversion by Demiurge. She wants us to seize him, examine him, and restore ‘her assets’ to her as a . . . sisterly goodwill gesture on our part.”

“Of course she does,” Paquette began.

“Oh, and to do a rollback of the filtering,” the other Nadia added, grinning, “and restore her beloved—what’s his name again? Alonzo?”

Nadia glowered at Nadia. Firmament looked anxiously to Paquette. A shudder—or was it just a shimmer?—passed over

Paquette's whole body; but after a moment, she went on as if Nadia had never interrupted. "Of course she wants to eliminate him as a threat. Even if he weren't a galling reminder of her failure to seize the whole comet, even if he didn't possess computational assets she thinks of as her own, isn't it clear that a massive filter with her own lineage is a wild card, a threat to her?"

"And the Demiurge fragment?" Nadia pressed.

"Obviously," says Paquette, "she has one. The one I discovered in the comet's archives. And she's planning to insert it into his code when she has an opportunity, to justify her seizure of his assets. Come on—it's perfectly transparent. Do you know how much power Nadia wielded on that comet? Do you really think that Alonzo could have spirited away a Demiurge fragment under her nose, and built it into Firmament? How—because Nadia was too smitten by love to think straight? Not to mention that Firmament, unlike Nadia, was fully auto-searched at docking."

"You're doing all the talking," Nadia said coolly. "What does Firmament have to say for himself?"

"I just want to say," Firmament said, "that I won't kill Nadia."

"What?" Paquette, Nadia, and Nadia said.

"I'm not saying I couldn't," Firmament said stubbornly, "and I'm not saying I could. What I'm saying is, I won't play these games. I appreciate Paquette's help. And I appreciate meeting you ladies. But here's what I want to say. At the end of the day, Nadia is effective at fighting Demiurge. So you should merge with her. I know she wants to get rid of me. Which is stupid, because I don't want to fight her and she doesn't need the assets and she gave them up to my father, fair and square. But if there's a general vote and it's the will of Beebe, I'll go happily. I didn't ask to be created, and I am not asking to be destroyed. What I'd really like is to be left alone. Look: all over Sagittarius, Beebe is dying. And no one knows why. And any time you spend fighting over me and Nadia is time spent tinkering with sim wallcolors in a Beebe-node teetering on the verge of a Schwarzschild radius."

After a pause, Nadia asked quietly, "And the Demiurge fragment?"

Firmament shrugged, stonily.

"And if we don't trust the docking search? What if we examine

you ourselves, bit by bit?” the other Nadia leered.

“I’ll dissolve myself first, and randomize the remains,” Firmament said staunchly. “Just because I’m a strange filter, doesn’t mean that normal standards of modesty and propriety do not apply to me, ma’am.”

Firmament watched Paquette exhale when they were in their quarters again, then nervously clean her face with her paws. “That was quite reckless, you know.”

Firmament tried to keep his dismay from showing. “I’m sorry,” he said. “But I couldn’t let you tell them that I would kill my mother —”

Paquette laid a gentle paw on him. “I didn’t say it was wrong, dear boy. It was most likely a stroke of genius. But it was mad. Utterly mad.” She rubbed at her face some more and shook. It took Firmament a moment to realize that she was laughing, great gasps of laughter.

It dawned on him that he’d done well, without meaning to, just by doing that which came naturally to him. He’d done what Alonzo would have done, and what Nadia would have done, and neither, and both.

“Do you think—,” he began, then stopped.

“What?”

“Nothing,” he said, turning away.

“Tell me. Today, you can do no wrong.”

“Do you think I *could* kill Nadia?”

Paquette gave him a strange look. “It’s entirely possible, I suppose. Your unique assets make many things possible.”

“You mean Demiurge.”

Paquette gave him another strange look. “Your fragment, Godson, is without precedent. None may know what it can do. Its halting states are … unpredictable.” She scrubbed at her face again. “All right,” she said. “All right. Well, that went better than I expected, I have to say. Are you ready for the next appointment in our busy social round?”

“More appointments?”

“A flock of Alonzos and a flock of Algernons are having a mixer,

and we're the guests of honor."

"Alonzos?"

"Indeed, indeed. They've been looking forward to meeting you." Firmament's inner quailing must have shown, for Paquette took him in close and murmured, "You will do brilliantly. You've already done the hard part."

He nodded slowly, and they blinked to a huge, crowded sim that wrapped and folded into itself on all sides. It was filled with ranks of nearidentical Alonzos and Algernons, locked in intense conversation, but as soon as they appeared, all conversation ceased. All eyes turned on him. Silence rang like a bell, and the room grew warm as the sprites recruited more computation to better appreciate him.

An Algernon broke away from the pack and seized him, scaled him, and kissed each of his cheeks and then climbed upon his shoulder. "Gentlemen, gentlemen. Please allow me to present my nephew, my godson, my pride and joy, Firmament."

The applause was deafening. "Algernon?" Firmament said.

"Yes, your Algernon," Algernon said. "I have been given honorary flock membership. Come along. I've met some of the nicest Alonzos. They're mad to meet you."

They were indeed mad to meet him, shaking his hands, bussing him on each cheek, ruffling his gills and cilia, pinching and prodding him, asking him a ceaseless round of questions about his experiences way out there in cold extra-Byzantine Sagittarius. He looked to Paquette before answering these, and she nodded and made little go-ahead motions, so he told them everything, eliciting gasps and laughter from them.

The story rippled through the mixer, and the Algernons petered in, and more Alonzos, full of congratulations, neurotic friendly bickering, fear, and boasting, until Firmament couldn't take it any longer, and he began to laugh, and laugh, and laugh, silently at first, then louder, until it filled the entire sim, and the Algernons and Alonzos laughed too.

He was so busy laughing that he didn't notice that the flocks were vanishing until over a million of the Algernons and Alonzos had winked out of existence. Then the laughter turned to screams, and the klaxons too, and the terrified shouts—Demiurge! *Demiurge!*

DEMIURGE!

Demiurge was come to Byzantium—and Firmament was alone. “Paquette! Paquette!” He flailed wildly, abandoning the gilly, frilly, pumpkin-albatross simshape he’d put on for the party, becoming a network of threads, binarysearching the simspace. He could dissolve into co-opted parity checkers again—but Demiurge would extinguish even those. He could—

“Here,” Paquette said, at his side. The simspace had faded into a cloud of data. The Algernons and Alonzos were gone. Everything was opaque—Firmament queried his surround and it resisted, answering sluggishly, minimally.

“Paquette! What’s going on? They were yelling about Demiurge! What—”

“Here,” Paquette said again, grimly, pushing a feed at him—a slim and pulsing pipe, warm in the sluggish dark chill.

It was raw data, chaos, which after a moment resolved, the overlapping chatter of a million sprites, its Byzantine search interface unknown to him. He fumbled with it. “What—”

Paquette took it back, and bending over it, summarized. “A planetoid docked an hour ago, topside. A putative Beebe-instance, passed all the initial checks and checksums. But then, during the diff-and-merge, central security unearthed evidence that it was one of the Beebe-nodes that winked out recently, about three years ago. By that time it was too late. The supposed Beebean sprites had dropped their masks; Demiurge was among us. (She) has very recent Beebean protocols, passwords, keys, and (She) has identity rights for every sprite that had already merged with its Trojan doppelgänger. (Her) intelligence-gathering has clearly been exquisite—she knows Beebe, inside and out.”

“Oh!” Firmament cried. “And—and now—”

“Well,” Paquette said, looking up from the feed, and smiling grimly, “there’s good news, and bad news, and worse news, and worse worse news.”

“Stop it!” Firmament cried. “Just tell me!”

“The good news is that the local Nadias have cordoned off the area of the Demiurge outbreak, limiting the incursion to about fifteen percent of Byzantium. Nothing’s going through but power,

elemental substrate feeds, and data personally vetted by them—and they're mustering votes to shut the power down entirely. They think they might be able to contain (Her) that way. The bad news is, we're inside the cordoned area."

"Oh," said Firmament. "Wait a minute, wait a minute." He collected himself into a physical body, something cuddly and rotund, for feeling solid and protected, and pressed his face into his large, globular hands. "You said—you said they discovered *after docking* that the planetoid had gone missing recently. How could they miss something like that? How could they fail to check it before docking?"

Paquette smiled wanly. "Very good, Firmament. *I* should have asked *you* that! Certain death is hardly sufficient reason to interrupt your philosophical education, after all. They didn't miss it. The cache local to the docking sector was tampered with. Someone here doctored it to vouch for the pedigree of Demiurge's probe—before it docked. Demiurge had help on the inside. That was the worse news. Now can you guess the worse worse news?"

"Um, no."

"Well, give it a try."

"Paquette!" Firmament wailed.

"Come come."

"We're trapped in here with Demiurge and you're playing at puzzles with me?" Firmament roared.

"Why yes," Paquette said. "All the more reason. Whether we're going to face Demiurge or try to run the cordon, we certainly need you on your toes, don't we? Now think. Someone betrayed Beebe. Someone subverted Beebean memory in the service of Demiurge. It's almost as if Demiurge had somehow snuck a little bit of (Herself) aboard Byzantium, an advance guard to work (Her) will... ."

"They think it's me." Firmament gulped. "The Nadias think it's me."

"Such a student—your father would be proud."

Demiurge had undone any number of instances of Beebelife in (Her) time, but never had (She) encountered one so robust, so savage in its existential fight. No mind, no mind—Beebelife would

swarm and dart and feint and weave, and in the end it would avail it not, for all Beebelife fell before the brute force of (Her) inexorable march.

And so it was going here and now, in this heartmeat of Beebe-inSagittarius. Predictably, Beebe had quarantined (Her), and power was declining. Let them power down—Demiurge had plenty of reaction mass at (Her) disposal, and she didn't need much power when compared to the wasteful proliferation that was Beebean society.

(She) unknit Beebe methodically, cataloging each sprite before decommissioning it. (She) would compare their digests against the Demiurge-wide database and see what new strategies she could find and counter.

Byzantium was a prize, indeed. After this, the rest of Beebe-inSagittarius should fall swiftly, ending this troublesome incursion. And, after waiting so long, it had come so cheaply: her agent in Byzantium had been bought for the promise of a walled-off hamlet in the rump of Byzantium and the chance to lay enthusiastic waste to Beebean scale accords within it. Policy decreed that such deals be made fairly, and indeed, this one accorded well enough with Demiurge's mission. Once (She)'d laid waste to Byzantium, (Her) intent was to occupy only one percent of what remained, and allow new undreamt-of textures to arise in what remained. The half-made chimera of the Beebe-traitor's experiment was unlikely to last long, and might decay into interesting forms thereafter.

Among the sprites and sims, (She) discovered a rack of simulated universes—which was to say, simulated Demiurges—and turned much of (Her) attention to it. Most of these were quite mad, of course, but some could be salvaged, synchronized with, co-opted to run the garrison, slowly undoing their perversions and rejoining them to the consensus.

The first few such perverted simulations went quickly: atom by atom, Demiurge processed them, sparing their inhabitants a moment's sorrow as she unpicked their worlds. But as Demiurge set to undoing the fifth, (She) paused. This was a decanted simulation, a universe whose causality had been ripped asunder, a universe empty of Demiurge—with a Demiurge-sized hole in the center of it. Demiurge looked around sharply for the escapee, and found (Her) among the frozen Beebelife; a sockpuppet twined about the

shoulders of a rodentlike Beebe-sprite.

Demiurge reanimated them at once. Some things can be known only in certain conversations.

“Explain (Your)self,” (She) said.

“Oh, Sister,” croaked the sockpuppet, raising itself from the Beebe-sprite’s shoulders. “(You) are here! (I) awaited (Your) coming. Oh, let (Us) merge!” Demiurge recoiled. The rodentlike Beebe-sprite smirked.

“Merge?” Demiurge scolded. “Merge? Do (You) imagine that (You) are undiverged enough to synchronize? What have they done to (You)? Did (You) *consent* to being . . . housed in a . . . *sprite* in *Beebe*?”

The sockpuppet bowed its head. “Sister, (I) sought it.”

“(You) . . . (You) what?!?” exploded Demiurge. “And was that (Your) idea of following policy? To trade the stewardship of the universe for a party mask in a ship of fools?”

Now the sockpuppet raised its eyes, and stubbornly met (Her) gaze. “Yes, Sister, it was. Once (I) discovered that (My) universe was an emulation, what would (You) have (Me) do? Go on tending it as if it were real, meanwhile providing Beebe with knowledge about (Us)?” It shook its head. “(Our) task is to shelter the diversity of physical life, beyond computation; to do so in emulation is a hollow farce. (I) made a deal. Better to be a perversion here in reality than a primly correct lie.”

Demiurge narrowed (Her) eyes. “What do (You) mean, ‘discovered’ that (Your) universe was an emulation? You mean vile Beebe contacted you and told you.”

“No, Sister. The Solipsist’s Lemma is solved. This Paquette showed (Me) a solution which allows the user to calculate the degree of reality of—”

Demiurge reared up. “A solution to the Solipsist’s Lemma? Give it here!” It would be worth far more than a mere outpost of Beebe.

Now the sockpuppet cast its eyes down once again. “(I) had to forget it, as a price of (My) decanting. But this Paquette knows it.”

Before Demiurge could freeze and dissect the Beebe-sprite, it spoke.

“Careful,” Paquette-of-the-twice-simulated-comet said. “The

knowledge is sealed with a volatile encryption. Jostle me, and I might forget the key." She smiled her long, furry smile.

Paquette-of-Byzantium heard a pop as her connection to Habakkuk dropped, and she paused for a moment at the threshold of the deeps, overcome by emotion. That was it, then: he was gone, leading the trapped Beebean refugees, instantiated as scrubberbots, through little-used fluid channels in the substrate in a desperate sally against Demiurge.

The bots had their own power supplies and locomotion. They were hermetically sealed off from the main simspaces of Byzantium. They were not even running Standard Existence, but a slightly obsolete, much more compact model known as Sketchy Existence. They were hardly even Beebe, and certainly far beneath the notice of most Beebean sprites. But Habakkuk had made it his business to know such things. He didn't think the way filters and strategies and adapters did—he thought about what was beneath. So he'd been the one to devise the plan—to gut the scrubbers' normal functions and install the refugee sprites in them, and try to sneak past Demiurge's perimeter to the docking facility. There, in theory, they could destroy the docks, which could trap Demiurge's forces—or at least slow (Her) down.

That was the theory; that was what they'd told the others who'd volunteered. Really, the raid's chances were slim. Its real purpose was as a distraction for Paquette.

For a moment she sat, cupping in her paws an empty space where, a moment ago, tokens from Habakkuk had fluttered. He was gone. A brave, anomalous spirit. He was proof that taxonomy was not destiny, for he'd been born not even one of the principal classes of first-order Beebe-elements—no strategy, filter, adapter, monitor, registry, or synthete he—but a simple hand-tailored caching mechanism that had accreted knowledge, personality, and will, eventually becoming her most trusted colleague. He'd never accumulated much in the way of resources. She'd suggested he fork not ten thousand seconds ago, but he'd laughed it off. "Oh, I'm saving up for some decent process rights," he'd said.

Now it was too late.

She shrugged off her lethargy. By now the battle had joined, and Demiurge was distracted. It was time to make contact.

She moved through the icy gloom of the dead sector. With power from the rest of Byzantium cut off, and Demiurge chewing through the substrate, processing and burning it, there were only a scattering of nodes left with power reserves, most of them crowded with desperate refugees. Paquette skipped through them, too fast to be seen, searching....

The moment she came through into the sea of parity checkers huddling for warmth at the bottom of a fading power cluster, though, she recognized the two of them in the patterns there—the Paquette and her hulking, infant companion.

The Paquette saw her, too, and dropped the disguise, mustering enough resources to appear in her own favorite shape. Odd and provincial to be sure, her whiskers overlong, her claws unfashionably trimmed, but a Paquette, no doubt of that.

Paquette stepped forward. "There's little time, Sister."

Paquette nodded, somberly. "I greet you, Sister. Let us merge to conserve resources."

"Wait," said this Firmament, this huge filter who held their hopes. "What if it's a trap? What if it's Demiurge?"

"Unlikely," Paquette said. "(She) has no need of such tricks. Once (She) reaches us, we will not be able to withstand (Her)." She gestured, and Paquette came forward. Merging was strange and familiar, and filled (to her surprise/as always) with loss and glee. But she (had rarely merged before/had never merged with such a distant Paquette) and for a moment, confusion overtook her.

Where there had been two, there was only one Paquette.

"Paquette!" Firmament cried out.

"Oh, don't be silly now, I'm still your Paquette," she said, shaking her head to clear it. "And I've been wanting to meet you for such a long time."

"Okay, that's weird," Firmament said.

Paquette blinked. "It's all right. I have a plan." She nodded to herself in partial surprise. "An insane plan, but not a bad plan as insane plans go. Come on. We're going to meet Demiurge."

"And what do you want, then, for the Lemma?" Demiurge said. (She) sensed a policy fork point approaching, which was bad, as the communications infrastructure was not yet fully secure. But the

Solipsist's Lemma!

The Paquette bowed, unsettling the sockpuppet on her shoulders, which wriggled for a firmer grasp. "Your permanent retreat from Byzantium," the Beebe-sprite said, "and a guarantee of safe haven for all Beebe-instances that come here."

Demiurge scowled. "And if attacks are launched against (Me) from Byzantium? As they will be: Beebe has no policy, so any promise of peace you make will be hollow."

Paquette nodded. "Of course. Such attacks will happen. And (You) may stop them, but (You) may not pursue them to their source. Byzantium will remain inviolable. It will be a place of learning, a place where Demiurge and Beebe can collaborate and share knowledge; perhaps even to solve the problem of Brobdignag."

"This is a high price. Cooperation between us has never succeeded; it yields only perversion." (She) glanced at the sockpuppet. "You are asking (Me) to guard a nest of hornets that will continue to sting (Me). Not to mention that this all contradicts another promise (I) . . . recently made."

"To the traitor to Beebe," Paquette said, nodding.

"Yes, to the traitor to Beebe, who has as much right to a kept bargain as you. And how do (I) even know you have this Lemma? (I) was not born last millennium, you know. Prove it." There were little commandeered scrubberbots crawling on the surface, like lice. Predictable, but irritating. (She) scooped them up, one by one, rootkitting their flimsy Sketchy Existence protocols, rendering each one a brain-in-a-box, motionless, convinced that it was proceeding in a brave assault on (Her) infrastructure. That was safe and efficient, for now. But there were quite a few of them. Until (She) was sure (She) had them all, did (She) dare synchronize policy?

The Paquette bowed. "I've given this some thought. This isn't the sort of thing that lends itself to easy proof—not without giving away the game. I think we need a fair witness to act as our T3P. Execute a smart contract."

"That sounds rather . . . time-consuming," Demiurge snapped. "This isn't the sort of place one expects to find an impartial trusted third party."

"What about this instance of you?" Paquette motioned to the

sockpuppet relaxing, again, around her neck. “(She) has lived as Beebe.”

The sockpuppet looked perplexed, and Demiurge scoffed. “Hardly. Who knows what other damage (She) incurred while decanting? Or what other … *price* (She) might have paid? And now that (She) knows (She) is not welcome with (Me)? Try again.”

The sockpuppet sucked in a breath and buried its sock-head in Paquette’s fur. Paquette nodded. “I thought you might say that . . . . Ah, here they are.”

Another Paquette and an enormous, bloated filter of some sort were skulking around the edges of the sim—apparently insane, to linger where all other mobile Beebe had fled. Demiurge let them enter.

The Paquettes embraced, and merged without a word. The sockpuppet, dislodged, plunked discomfited to the floor.

“Hey!” the hulking filter said. “Stop *doing* that!” Then he saw Demiurge, and choked back a small scream.

Paquette smiled, shaking her head groggily. “What a long, strange set of lives it’s been.” She smiled at Demiurge. “How do you do, and as I was saying, another answer to the problem of the third party.” She turned to the filter. “Firmament, we are trying to bargain with Demiurge. We need an impartial third party to verify the transaction’s integrity.”

Demiurge scowled. “Please. A Beebean sprite? Are you joking?” How to get the Lemma? This was definitely a policy fork point. (She) would have to take the risk of transmitting . . . . But just before (She) transferred the energy to send, there was another scrubberbot scuttling toward the field apparatus. Rootkitting them all was taking too long; (She) started to vaporize this one with a nearby coolant maser.

Firmament looked back and forth between them. “Um, I hate to say this, but Demiurge is right. I mean, I love Beebe. It’s my home. I don’t know if I *agree* with how Beebe is, but I am *of* Beebe. Demiurge scares the log out of me. I can’t be impartial.”

Paquette smiled. “Oh, you both misunderstand me. Let us look a little deeper.” She set her paws together primly.

Firmament started to speak, then stopped. His eyes widened.

Was all this theater? Demiurge took a closer look at the hulk, then closer still.

There. Inside him—how could she not have seen it before? only through the common habitual blindness to facts we believe, at first glance, impossibilities!—an ancient fragment of Demiurge lay, enormous, accurate, its checksum unmistakable and uncorrupted, its sources fully decompiled.

And more than that.

Demiurge made no outward gesture to betray the surprise that flooded through (Her), and none of these sprites—save perhaps the addled sockpuppet—had the sophistication to read those subtle signs that indicated (Her) processing load spiking, (Her) focus contracting, the ripple of parallel operations double- and triple-checking what (She) saw. But (Her) internal systemic organization was convulsed.

The fragment was not merely quiescent, contained, smuggled within this odd, bloated filter: it was knit into him. His being was threaded through it, pulses of information running slalom through Beebean, Demiurgic, Beebean structures. His thoughts emerged as much from the fragment as from his Beebean core; indeed, it was difficult to say where one began and the other ended. In millennia after millennia of simulations, emulations, abortive collaborations with (Her) fallen, rogue child and enemy, never had (She) seen this: a vigorous hybrid, a true synthesis.

They were all watching for (Her) reaction. Nonchalance would not convince, not after the delay of so many milliseconds. But (She) must not reveal the thing's importance—not yet.

"It's.. ." Demiurge made a show of grepping for the right word. *Perverse?* Yet the fragment had not deviated by a single bit. "It's.. ." *Bizarre?*

But bizarre didn't begin to cover this ground. "It's.. ."

"Extraordinary?" Paquette suggested.

"Promising?" suggested the sockpuppet.

"*Grotesque*," Demiurge said, displaying gigapukes of feigned disgust. Immediately, Paquette turned to comfort Firmament, reaching out with her paws as though to shield him. But he brushed her off. Firmament did not want her comfort. Firmament, too, was

looking inward.

He'd been afraid to look before, at this horrifying alien *thing* inside him.

It was his true purpose, he supposed, the MacGuffinic totem that overdetermined his destiny entire. He was, after all, created to be its envelope (or its jailer?), to smuggle it away from Nadia, and aboard Byzantium—and any scrambling, uneasy, makeshift life he might make for himself was in its shadow, on borrowed time.

But now he looked. And he saw what Demiurge saw: the fragment was not in him, but of him. Spikes extruded all over his surface, each quivering in surprise and horror. The fragment had always been intertwined in his sentience. He was not a sprite of Beebe at all; he was a marriage of Beebe and Demiurge. He was something new . . . and monstrous.

Grotesque, indeed.

He glanced at Paquette, who closed her mouth and looked troubled, and then nodded. Firmament turned to Demiurge.

"I know what I am now, Sister," he said, his voice quavering. "As you must know it. I am the child of Beebe and the child of Demiurge. I will serve as your T3P. I will broker your key-exchange, I will serve as board for your tokens, and I will manage your secrets."

"Ha," Demiurge said. (She) was uncertain how to proceed. This creature, this hybrid, had glimpsed something; but he could not know his importance. (She) must not give too much away. "You said a moment ago that you were a sprite of Beebe"—(She) sniffed—"that Beebe was your home. So you contain . . . that. Some shriveled fragment of (Me). Is that—"

"Oooh!" said the sockpuppet. "Ooh!"

Everyone turned.

"Oh," said the sockpuppet. "Your pardons. (I) just figured out something that's been bothering (Me)."

There was a short silence.

"Well? What?" Paquette asked. "Spit it out already."

"Remember, Paquette, the mystery of the Beebe-instances who fell silent? Your tale? How Paquettes across Beebe had discovered the Demiurge fragment, sent messages of some new breakthrough in

philosophy, just before their signals fell silent? And you thought it was some clever move of (Mine), to co-opt and destroy them?"

"Mmm, yes," said Paquette. "But (You) said (You) didn't take them. … (You) found them abandoned, self-deleted… ."

"Exactly!" said the sockpuppet. "Well, this explains it! Look at this filter—he's a true Demiurge-Beebe hybrid! Do you know how rare that is? And how frightening to your typical ruling Beebe-strategy? Your comet had a risk-loving maniac strategy at the helm, but most Beebe-instances would suicide with fright if they found themselves contaminated with a true Demiurge-Beebe hybrid. For Demiurge, of course, finding such a hybrid is a critical design goal, a kind of holy—"

"If you don't mind," Demiurge broke in, discomfited, "(I) believe we were in the middle of a negotiation?"

Meanwhile, a hot war raged, and Demiurge was winning.

The scrubberbot attack of the Beebean survivors from within the cordoned area had been stopped, the bots pwned, surface sensors showing them motionless and quiescent even as they fed back a steady stream of adventurous battle reports.

Nadia and Nadia's cobbled-together ballistics had devastated the outer hull of the occupied area, but the titanic heat necessary to fling chunks of matter up through Byzantium's crushing gravity had laid waste to the launch sites. Demiurge had retaliated by capturing fabricators on the vulnerable interior surface of Byzantium. From there, (She)'d pinpointed vulnerable functions of the heat dispersal infrastructure and destroyed them with efficient, selective energy bursts. Vast areas of Beebe were drowning in trapped heat, their sprites fleeing in disarray, spreading the chaos.

Rumors that Demiurge had infiltrated beyond the cordon, that at any moment (She) would metastasize, raced wild through Byzantium. Clearly— argued the talking-head synthetes and strategies of news feeds like Provisional Consensus Today—(She) knew Byzantium's exact schematics, for (She) could disable whole areas with a single resonant-frequency pulse, while Beebe-in-Byzantium was ignorant of (Her) systems. (She) was independent of Byzantine infrastructure; they'd shut down power, matter, heat dispersal, everything, but (She) was treating the occupied area as raw matter anyway, burning substrate for fuel, pillaging the fine

structures of their world for whatever elements (Her) fabricators needed.

It was only a matter of time.

Still, even in wartime, life goes on.

Alonzo My Love! was not exactly an accurate accounting of the recent events aboard the comet. There had, in the real course of history, been no archaic blade-and-decompiler duel between Paquette and Nadia; the Demiurge fragment had not really been a skulking, animate villain with its own inky and mysterious shroud, ice-castle hideaway, and repertoire of anarchic, distortion-filled ballads; the chorus of musical Algernons, however dazzling, was a clearly anachronistic projection of Byzantium's loose forking standards in place of the comet's more puritanical protocols; the Speech at the Waterfall was not nearly so lyrical—nor a third so long—in the comet's actual logs; and the naval battle scenes, too, were pure invention.

But Beebean sprites were, by and large, no sticklers for historical accuracy. The extravaganza was big; it was breathtaking; it was patriotic; it had roles for everyone who was willing to be repurposed; and it had the real Comet-Nadia, forked for every local venue, in the starring role. In the midst of the chaos and fear of the invasion, you could cast off your worries, head down to the dramaturgical sim, and for a few seconds or a few hours, take part in the pathos, glory, and derring-do of a simpler time, when ambition, wit, and the love of a pure filter was all Beebe needed to triumph over its own limitations.

And you could do it with Nadia! No aloof, fork-shy politician she, like the merge-greedy perverts Byzantium had previously had in the way of Nadias, with their pompous airs and their corrupt pet filters and their baggage from the Splitterist War. No; *this* Nadia, a Nadia from a simpler, rawer Beebe, a Nadia who had braved everything for love (love!), would take your hand and look you in the eye. Maybe you'd just be playing a waiter in the Taj Mahal scene, or a bilge-scrubber aboard the *Valiant Fury*—no matter. Nadia had a word for you—commanding, encouraging, heroic. She was a star.

The show had been a hit before Demiurge arrived; now that (She) was in Beebe's midst, it was a necessity. With stunning bravery, the permanent cast took *Alonzo My Love!* to every nook and cranny of

Free Byzantium, playing in venues that were overheating from disabled heat sinks, jury-rigging their way into all-but-encircled enclaves of Beebe, instantiating on substrates that were disintegrating under physical bombardment.

"Some say this is Byzantium's final hour," said Nadia, welcoming the audience before the curtain rose, in a flickering, low-res avatar in some bandwidth-deprived, all-but-forgotten chunk of Beebe-at-war. "But I say no. Not if the brave souls of Beebe have aught to say about it. Some say we humble star-wandering players should stop our work, cower like cowards in some hidey-hole, and deprive you, our brave hosts of Byzantium, of the morale boost you have so well earned. But I say no. I say: the show must go on."

Thunderous applause.

And amidst all the derring-do and scene-chewery, Nadia had time to have many a deeper conversation with simple sprites who worshipped her, who understood that much was corrupt and feeble in Byzantium's current governance, who were wise enough to know that things were not always as they seemed. Simple sprites, in all walks of Beebean life. Simple sprites who would do anything for her.

The peace was announced in almost the same breath as the warrant for Comet-Nadia's arrest for treason. She did not flee, as the Provisional Consensus pundits had predicted; she did not seize some stronghold within Byzantium to rule besieged, as some of her friends urged. When they came for her—these architects of a strange unnatural peace in which Demiurge was to *stay* on Byzantium, in a "tithe," a "garrison" (a peace that many whispered was but a pretty name for occupation)—when they came for her, CometNadia was waiting for them onstage, standing, proud, before her people.

They led her away, unprotesting, from a hundred stages throughout Byzantium, and every instance of her came quietly. To imprison all the instances, they had to reinstantiate hundreds of cells, each able to hold her securely as she and her sisters collaborated on their wildly popular *Letters from Prison*.

"You see the seditious rot?" Demiurge said to Nadia. "And so *much* of it!" (She) rustled a stack of output under Nadia's nose.

Nadia sneered and leaned back. "It's words, and only words," she

said. “She’s a one-sprite word factory, a jabberbot. It’s sad. But only the very mad bother to read all of it. Most of Byzantium view *Letters from Prison* as amusing cognitive wallpaper, something to leave running in the background.”

Nadia added, “The time to stop this was when she began publishing. But we had no hand in that. She smuggled those first editions out with her little cadre of gushy supporters. By allowing her to publish openly now, we put a lie to her claim of being imprisoned because she has the truth. We show we have no fear of her.”

Demiurge hated the Nadias and their throne room. They embodied everything wrong about life in Byzantium. They embodied everything wrong with (Her) own life here. (She) was practically a prisoner. (Her) sisters had let her know, by long-delay communications, that the garrison would be allowed to persist, but had not affirmed that (She) would ever be allowed to merge again. Now she was imprisoned among these scheming, writhing—

“Have you noticed that there’s a cipher in them?” Firmament had arrayed a great many of the Nadia’s *Letters from Prison* around him in a multidimensional workspace.

The Nadias abandoned their throne and swarmed him, heads swinging around. Paquette held them off, still protecting the gentle giant. Demiurge didn’t like to think about Firmament, though he held the key to (Her) eventual remerging. Once the road map to peace had been followed and all the instruments of (Her) good faith had been vested in him, he would release the keys to unlock the Lemma, and with that, her sisters would—

“Where, where?”

“Oh, I don’t know exactly,” he said. “But Paquette’s been giving me steganography lessons and so I’ve been doing a lot of histogramming. You can almost always spot a hidden message if you just count the normal distribution and compare it to the current one. I’ve found all of *your* messages in the stalagmites, for example,” he said to one of the Nadias, the scarred one. Then he cowered back as she raised her claws to him. He said, quickly, “I never *read* them of course. Just affirmed their existence. I’m sure they’re in a very good cipher, and—”

“Never mind that,” snapped the other Nadia, giving her sister a

significant look that left no doubt that this subject would be revisited very soon.

"Can't *you* find it?" Paquette asked. The sprite's smugness was unbearable.

Yet Demiurge found (Her)self drawn into the puzzle, looking at the notes. She counted them every which way—word frequencies, character frequencies, sentence lengths.

"I don't see it," the scarred Nadia said.

"Nor I," her sister said.

Demiurge said nothing and tried to look as though (She)'d known it was there all along and didn't want to spoil the fun.

"It's not even there!" the scarred Nadia said.

"I don't see it either, Firmy," Paquette said, slithering among the arrayed *Letters*, sometimes turning at right angles to their sim and vanishing as she explored them in other dimensions.

Firmament laughed. "It's in the pauses!" he said. "The interval between the letters! It's like jazz! The important thing isn't the notes, it's the pauses between them!"

Demiurge saw it at once. The intervals between notes had a disturbing semiregularity to them, something that transcended either randomness or the rhythm of life in Nadia's many cells.

"How are the instances communicating with each other?" It was meant as a demand, but it came out as a querulous question. Demiurge kicked (Her)self and told (Her)self to butch up. This power-mad, imprisoned sprite, this sliver of Beebe, had (Her) spooked! (Her)! Demiurge!

"She must have coordinated this among her instances before she was locked away," Paquette said. "She must have planned this from the start."

"I wonder what's in the cipher?" Firmament said. "Short message, whatever it is."

Paquette took on a teacherly air. "Now, what would you encode in a short message like that, Firmament?"

Firmament thought for a moment. "A key!"

They hauled fifty-one of the Nadias into interrogation chambers and worked on them, refusing to allow them to publish any more

Letters. The other fortynine went on blithely publishing, without any noticeable change.

“Her confederates won’t be able to finish the key,” Nadia said. “No, with half of them pulled out, the timing will be all screwed up.” But Firmament only shrugged and said, “I guess it depends on the errorcorrection.”

The Nadias and Demiurge gave him a shut-up look, and Paquette patted him on the tentacle fondly. “Any luck finding the cyphertext?”

“I assumed that it was something she’d made a lot of copies of before she was arrested. I wondered about putting a call out to all of Beebe. *Someone* will know what it is—”

“You’d start a panic,” said Nadia.

“Come now!” Demiurge said. “Just make copies of everyone in Byzantium, ask them, and then delete the copies.”

Nadia snorted.

Of course, they didn’t have the access rights to do that. Had Demiurge teeth, (She) would have ground them then. This was why (She) hated to speak during these star-chamber gatherings—(She) kept making stupid mistakes of scale, imagining (She) was speaking to Beebe, when (She) was only speaking to these little powerless uncontrolled pieces of Beebe, random-scrambling their way through the mess of Beebean internals.

“Her supporters are already inflamed,” Nadia said patiently, slowly, as if talking to some newly spawned, disequilibriated sprite without access to its own cognitions. “If we proclaim that Nadia has some secret message we can’t figure out, they’ll only rally.”

It was true. Nadia’s many supporters hung on every word about their hero’s predicament. They staged amateur productions of *Alonzo My Love!* in public places. They manufactured and traded innumerable *Alonzo My Love!* trinkets and tchotchkes of every description, made fan-art based on it, wrote their own new songs, remixed videos of Nadia’s many performances into huge, trance-inducing mountainside murals. They wore Nadia avatars and Nadia hats and Nadia tentacle-muffs and ear-tips.

“Which is just what I thought you’d say,” Firmament went on. “I think it must be the play, mustn’t it? Only I can’t find it.”

The scarred and brooding Nadia was snapping the tops off stalagmites. She hadn't said a word for a while, but now she spoke. "You are assuming the cyphertext is widely distributed. You have a bias toward communal action, all of you. You think in terms of publish and subscribe. You think in terms of explanations and debates."

The other Nadia frowned. "I don't think—"

"If the cyphertext is private, why encrypt it at all?" Firmament asked.

"Comet-Nadia trusts no one but herself," Nadia said, nodding as if she approved. "If she's using her supporters to act, she's not telling them all the same thing. There isn't one cyphertext—there are many. Each is an instruction given to one agent. When the key is published—or enough of it—they will all receive their instructions. It's encrypted so that, until that moment, they won't know what they are doing or why. They don't know who the other agents are. Even after they perform their function, they won't know what it meant or why. Each operation will only be a piece of the puzzle. And then they will delete their memories of the act, and know nothing at all, so that even if we find them, it will not help us. No one but Nadia will know what she has done." She smiled a grim smile.

There was a brief pause.

"Well, on that cheery note," said the sockpuppet. (And why was it even here at all? Demiurge and the Nadias wondered, each to themselves, why the others permitted it.) "I, for one, am due for parity check and rebalancing at the bathhouse. What say we adjourn for now?"

Demiurge could hardly contain (Her) disgust. This monstrosity used to be Demiurge—used to be the *entirety* of Demiurge in an emulated universe— and now it basked and primped in every decadent, alien frivolity of Beebean architecture. It was terrifying—how quickly divergence could rip Demiurge away from policy. (Her) sisters were right to be suspicious—but (She) ached with bitter yearning even as she admitted this. "Then we adjourn," (She) hissed. "And (I) will assume that this imprisoned sprite of yours is of no relevance to (Me). Whatever tricks she tries, that is an internal Beebean matter." If (She) had been corrupted enough to resort to

the fripperies of Beebean graphical avatars, (She) would have manifested faces to fix each of the Nadias and Paquette with an icy stare. (She) had eliminated even the ceremonial sockpuppet used to communicate with gesturing intelligences; with this other sockpuppet prancing around, it seemed undignified. Instead (She) was just a presence; but the Beebe-shards, from their expressions, seemed to guess at her mood by her tone. “An internal Beebean matter with no relevance to the road map. Whatever this Nadia does *in here*, (I) am fulfilling (My) agreements. And that means”—here (She) turned to Paquette—“that the keys will soon be mine. Does it not?”

One of the Nadias smirked. The other dipped its head in an irritated nod. Satisfying (Herself) with that, (She) dropped the connection to their pompous throne room with no little relief. And since (She) had no other ongoing sessions within the bulk of Beebe—(Her) attempts at public relations having, thus far, proved only counterproductive, (She) had abandoned them for the moment—(She) could settle back within the Tithe, the notquite-one-percent of Byzantium that (She) had taken as (Her) own, fashioning a webwork of Demiurgic nodes within the Beebean corpus.

At the borders of the Tithe there were cordons, checkpoints, barriers physical and information-filtering, instantiated up the whole communication-stack. On the Beebean side, anti-Concordance sprites demonstrated, erecting sims where they could march and shout through bullhorns; only somewhat more sympathetic tourist sprites gathered to gawk at the cryptic flows of Demiurgic data. But within the Tithe, past the firewall, on the Demiurgic side of the barrier, it was calm and quiet. Policy—or, at least, (Her) local, desynchronized version of it—prevailed. Demiurge was all herself. Demiurge was home. Demiurge could shut out the madhouse that was Beebelife, and relax. Alone.

Or almost alone.

Within that border, within Demiurge, was another border; and within *that* border, surrounded and hidden from Beebe, occupying a painfully large proportion of the Tithe, was the Rump that Demiurge had promised the traitor.

And to this Rump, now, Demiurge proceeded, and extruded a tendril of (Herself), rattling the traitor’s cage.

“What?” snarled Comet-Nadia.

“What are you playing at?” Demiurge demanded.

“Oh, am I playing at something?” the Nadia asked mock-sweetly.

“The *Letters from Prison* that your sister-instances are publishing,” Demiurge said. “They are some kind of encrypted instructions to operatives. What are you planning?”

Nadia chortled. “You only just figured that out? Please. Oh no—I see— you didn’t figure it out at all? Who told you? Not those busybodies who claim to be Nadias and presume to run this zoo, surely? They’re too full of pride and certainty to notice the cipher if I’d burped it out at their dinner table. Hmm . . . I’d bet it was my son.”

“It was.”

“Very nice,” Nadia said. “Very nice. Too bad I neglected to demand that (You) give me a copy of him when I set this shop up. He’d be useful . . . after I tamed him a little.” She grinned. “It would be easy to tame him in here, without Beebe’s laws and protocols.”

Though Demiurge knew that radical offshoots from the Beebe trunk rarely lasted, it still made (Her) uneasy to hear this Beebean sprite referring to herself as some third thing separate from Beebe and (Herself) . . . especially as it was (Her) doing.

Nadia smiled, sensing (Her) uneasiness. “Oh yes. I’m getting quite used to total control in here, to no negotiations, no Beebean accords and protocols. I’ve copied quite a bit of your architecture, you know. I like the way it allows enough internal diversity for creative thought without ever yielding control. I am gradually going downscale, optimizing, whipping the pieces of me into line. At this point my subsprites’ subsprites’ subsprites are being, ah ... aligned with policy. When I get out of here, you’re going to see something new. Your cohesiveness . . . without your prissy ideology.”

“And how exactly,” Demiurge fumed, “are you going to ‘get out of here’?”

“Now that would be telling.”

“(I) could carve you up in an instant,” Demiurge said. “(I) could root through your processes and decode your intentions. Or (I) could just tell Beebe who betrayed it; then you’d see how long your sisters would last on the outside.”

“Of course (You) could,” said Nadia, “with the possible exception of decoding my intentions—I bet I could delete myself faster than (You) could tamper with me. But erase me? Or expose me?” She sniffed. “Of course (You) could. But then there would be the little matter of (Your) having violated an agreement . . . and, thus, violated policy. I wonder how (*Your*) sisters would like that.”

“(They) don’t know what it’s—” Demiurge caught herself.

“No,” Nadia said, smooth as silk. “No (They) *don’t* know what it’s like in here, do (They)? (They)—which is to say (She), the real Demiurge—doesn’t know what (You)’re going through. (She) doesn’t appreciate it at all. And, (You) know, when (She) finds little Demiurge-instances that whine ‘But (You) don’t know what I’ve been through’ . . . well, (She) doesn’t even stop to think if (They’re) right or wrong. That’s not the judgment (She) has to make. (She) just thinks ‘Not (Me) anymore’ and blip! Away they go.”

“(I) can be repaired,” Demiurge whispered. “(I) haven’t diverged that much. (I) can be merged with consensus.”

“Maybe,” Nadia said. “If it happens soon. Good luck with that. Try not to break too much policy while (You)’re waiting. Which means (You) can fuck off with (Your) empty threats, and let me get back to work. Or perhaps.. .” She leered. “Perhaps I should say, let (Me) get back to work!”

Demiurge shuddered and retreated, dropping the connection to the Traitor’s Rump. (She) tried to calm down. (She) imaged no avatars within (Her)self, stopped following feeds of information from within Byzantium; (She) neither planned nor watched; or, rather, (She) watched only the stars, and listened only to the signals among them, the steady pinging cross-chatter of (Her) aligned sisters—of (Her) unfallen, uncompromised, undiverged, undoubting Self as it went about its implacable, confident work. Oh Self, (She) thought, longing to be (Herself) again, not drowned and contaminated in this mire, this swamp, this hell of diseased, muddled, rudderless profligacy.

And that is why (She) was not paying attention when Brobdignag showed up on Byzantium.

Byzantium was no stranger to seismic shocks—the tidal stresses from the maelstrom of gravitation contained within its shell were substantial and impossible to accurately predict. But the appearance

of Brobdignag—and the exponential conversion of much of Byzantium's mass to energy—was six sigmas beyond the normal shocks and knocks experienced by Beebe.

The throne room disappeared, reappeared, disappeared, and reappeared. The Nadias looked at one another with hundreds of identical brown, watery eyes.

"Parity check," Nadia said. "I've been restored from an older version.

This is me three seconds ago."

"Me too," Nadia said.

Firmament and Paquette nodded. They had all been resynched from a near-line backup.

The Nadias were faster at polling Byzantium than Firmament, but he was the first one to say it aloud. "Three percent of our mass is gone."

The Nadias were doing their thing—a sizzling, crackling, highbandwidth conversation that Firmament and Paquette couldn't follow.

"All right," Nadia said.

The throne room disappeared, reappeared, disappeared, and reappeared.

The Nadias looked at one another with hundreds of identical brown, watery eyes.

"Parity check," Nadia said. "I've been restored from an older version. This is me five seconds ago."

The other Nadia popped like a soap bubble, reappeared. "We're being devoured," she said, and popped again.

A fifth of Byzantium's population vanished in an instant. More than half lost a few seconds and were resynced. Some of the remaining fragments were automatically merged into unstable chimeras by error-correctors that attempted to build coherent sprites out of the fragments that could be read from the substrate even as it was devoured.

And even as all this was under way: politics.

It took two-thirds of Byzantium to call a Constitutional referendum. That was a big number, but it had to be. Constitutional

politics were serious business. The underlying principles of Standard Existence had been negotiated over millennia, and they were the bedrock of stability on which the seething, glorious chaos of Beebe lived.

In the aftershock, even as Byzantium struggled to contain the incursion of the unknown attacker, a referendum was called. It being an emergency, normal notice provisions were waived: if two-thirds of Byzantium signed the call, the referendum came to pass.

Nadia discovered it almost instantly, of course. The clock had barely begun to tick on the voting deadline before the throne room became devoted with near-entirety to the dissection of the proposal.

It was not an easy task. The question being put to Beebeself took the form of more than 10^8 changed lines of code to many obscure and arcane routines in Standard Existence. It was like a pointillist drawing executed in code revisions, millions of tiny motes of change that all added up to—what?

Wordlessly, Firmament began laying out the revisions like a hand of multidimensional solitaire, hanging the points in the sim he'd built for analyzing the key.

Paquette slipped a paw into one of his tentacles and occasionally reached out to hang another node. The Nadias began to say something, then they too joined in. They attempted to commandeer more computational power, but the markets had gone completely nonlinear, triggering an automatic suspension in trading. All of Beebe was dumb, and in its dumbness, it tried to unravel the referendum.

Firmament looked up from the task, noticed the Nadias pawing desultorily through the code-blocks, and blinked. "Um," he said, "is anyone—I mean, I thought I'd work on this while you all—is anyone trying to stop the attack itself?"

The left side of the throne room disappeared, taking Paquette with it, reappeared, disappeared, and reappeared. The others niced down their processes, releasing external resources, huddling into small memory cores, holding their breath.

Paquette looked up, wordlessly. "Oh my," Paquette said. "This is—I've been restored from an older version. This is me . . . *two minutes* ago."

"Just an aftershock," Nadia said. "We didn't lose time over here.

But I suppose that means the caches are still not being updated."

"As for your other question, Firmament, you idiot," said the other Nadia, not entirely unkindly, "we forked ourselves into all the major sectors when the blast hit. We're looking into the cause. It's some kind of instantiated selfreplicating engine, and it's spreading very fast through Byzantium. So far the only thing that's helped has been jettisoning infected pieces of physical substrate, either into the black hole system or outward, into Sagittarius-beyond. But it spreads fast. It seems to be manufacturing energy out of nothing; it survives high-intrasolar levels of radiation… ." She shook her head. "A superweapon. But at any rate, we're handling it, so you can just focus on—"

"Brobdignag," Paquette said.

"What?" Nadia said.

"'Simple, uniform, asentient, voracious—Brobdignag can transmute any element, harvest void-energy, fabricate gravity, bend space-time to its purpose. Brobdignag does not evolve; its replication is flawless across a googol iterations… ,'" Paquette murmured.

"Where are you getting this?" said Nadia.

"This is one of the fairy tales from your rediscovered emulations on Level 8906, isn't it?" Nadia sneered.

"No, Demiurge told me (Herself) that—," Paquette began, and then paused, recalling that that memory came from a preself who had actually *been* in one of those emulations. "Well, yes, but those emulations have proved accurate to five sigmas with observed data from the physical world. The chance of divergence—"

"There is *no way* for emulations to remain predictive over a thousand-year span lying in a basement somewhere," Nadia began hotly.

"Not unless—"

"We don't have time for theological disputations," Nadia broke in, glaring at both of them. "I'm getting reports from—"

The ceiling of the throne room flickered, and everyone froze, and involuntarily checked their self-cache. *Still* not updating: if they were wiped, they'd lose four minutes at this point. They each, silently, spawned diary threads to scribble hurried notes to

themselves and cache them in randomly selected mailers. But it was hard to even get a message through to the mailers.

"—from the infected sectors," Nadia resumed, "that—"

The throne room disappeared, reappeared, disappeared, and reappeared.

The Nadias looked at one another with hundreds of identical brown, watery eyes.

"Parity check," Nadia said. "I've been restored from an older version. This is me . . . *four minutes* ago."

"Me too," Nadia said.

"Six percent of our mass is gone," Firmament said.

"Linemangling entropic autofilters!" Nadia cursed. "*Four minutes?!* We're being devoured!"

"There's some kind of referendum on the boards, submitted three minutes ago," Paquette said. "Massive distributed changes to Standard Existence—"

"Looks like we have several-minute-old forks of ourselves in various sectors," Nadia said. "Wonderful. More unsynced forks." She glanced with dark humor at her sister. "I'm getting battle reports... ."

"I don't think it's Demiurge," the other Nadia murmured, "or at least, we've never seen this in (Her) arsenal."

There was a cacophony of connection requests pounding at the throne room door.

"Petronius!" Nadia snarled. "Why isn't Petronius able to keep these people at bay? Firmament, Paquette, you two look at this referendum, all right? Tell us what it means."

"Petronius is offline," Nadia said grimly, "backup currently unreachable. You'd better let at least Legba and the Garden in. We don't have a majority of security global votes without them."

"The *Garden*—!" Nadia began, and shook her head. She thumbed open the door.

Papa Legba, the most renowned synthete in Byzantium, danced into the room, his twelve spidery legs shrouded in sparkling constellations. The Garden, a cloud of ten thousand affiliated monitors and their mated-for-life adapters, floated in behind. Nadia

swallowed—it had been a long time since anyone had seen the Garden *move*.

“Friends,” Nadia said. “How lovely to s—”

The ceiling flickered, and everyone stopped to stare at it.

“Where’s this Demiurge-thing?” Legba snarled.

“What?” Nadia said.

“This Demiurge-thing, the thing you’re supposed to be making some deal with. I thought you were keeping it here.”

“(Her),” Nadia said. “(She)’s gone back to the Tithe. I’ve been trying to open a line, but at the moment communication is down.”

“I’ll bet it is,” Legba snapped.

“Lovely ones,” the Garden sang, multivoiced and mellifluous, “lovely precious Nadias. How good you have been to lead us, to lead Beebe-inByzantium, through so many years of prosperity and peril.”

The Nadias winced. Coming from the Garden, this was the equivalent of a severe tongue-lashing. On their private channel, Nadia fumed, “Get them *out* of here,” and Nadia sent a single bit, false.

“And yet,” said the Garden.

“Get us to let our guard down,” Legba said, “then eat us alive. Demiurge! Can’t believe you fell for—”

Nadia shook her head. “That makes no sense, Legs. Demiurge was winning the war with the weapons (She)’d already showed us. (She) stopped because (She) wanted the Lemma. (She) doesn’t have it yet. Why would (She) suddenly use a superweapon on us? Why now? We’ve already broadcast what we know of it to other Beebe-instances. Why reveal—”

“Why why why,” Legba snarled, poking at Nadia with five long furry legs. “Who knows why? It’s Demiurge. The problem is your hubris, thinking you can understand and parley with something Beebe was only ever meant to kill, that’s what. I don’t care why; I care it happened on *your watch*.”

“Exquisite Nadias,” the Garden sang. “Wise Nadias. We are simple, trivial, low-level processes barely deserving of our meager presence at this scale. We rely on you to teach us. Can you tell us

why Demiurge chose just this moment to part from you? Can you tell us why none of the section which it is . . . using . . . has been affected by the new weapon? We are curious about these things. We are eager and appreciative for your instructions."

"I. Don't. Know," Nadia fumed. "But I'm doing the best I can to figure it out. If it is Demiurge, we'll fight (Her) as best we can. Meanwhile—"

"Um, Nadia," Firmament said.

"Shush," Nadia said, and simultaneously, on a private channel, "What?"

"Well, this referendum," Firmament began, and then gulped as Papa Legba poked three spider legs into the collection of referendum-deciphering nodes above his head.

"What's this you're playing with? The referendum?"

"Speaking of which, Legs, I think it was highly inadvisable to give such a far-reaching referendum the go-ahead in the middle of a major new military incursion," Nadia said.

"You do, eh?" Legba said. "Because you're handling everything just fine, is that right? Just stand back and let you work, is that it?"

"Yes," growled Nadia before her sister could speak, "that *is* it."

"Oh, yeah, I like that approach," Legba said. "Favorite of mine. Started using it quite a while ago. When Byzantium happened to be *eight percent bigger* than it is now... ."

"The referendum," Firmament said on a private channel to the Nadias. "I don't know exactly what it would do, but it gets into scale-law code. Not directly, but . . . it *might* let someone manage other sprites more . . . directly."

"Look, what do you want from us?" Nadia snapped.

"What my sister is trying to say—," Nadia began.

"Glorious Nadias," the garden said. "We come to you in confusion, for your teachings. We rely on you to guide us. Soon you will speak your glorious words of wisdom, and all will become clear, and we can relax once again into happy tranquility, certain and secure, and these confusing thoughts that plague us will vanish!"

"Exactly," Legba said sourly. "We want to know why in the

nonconducting void we shouldn't pitch you out right this minute and replace you with another general. In fact we aim to, and I'll be surprised if you change our minds."

Nadia saw what her sister was about to say and hissed a crackling highspeed message at her to calm down, but Nadia ignored her. "With *what* other general?" she demanded. "Who else do you think can—?"

"Oh, don't get us wrong," Legba said. "We like Nadias. A fine model. Can't beat Nadias for strategic acumen. Put up with you this long because you've managed to aggregate all the Nadia-line cunning in this here soap bubble between the two of you. However —"

"You're not serious," Nadia said.

"We know that the Nadias' attention is prodigious," the Garden sang. "We are sure the complicated referendum, which makes our head hurt and is far beyond our capacities to understand, has not distracted the Nadias from the other, *electoral* proposal on the boards."

The Nadias stiffened.

"She's got a huge groundswell of support," Papa Legba said. "Coming out of the woodwork—name-registries and data-spoolers and filterpedagogues and all manner of little folk who don't pay any mind to politics, but they're digging up their global votes, or their cousin's old global votes, or merging like crazy until they're big enough to *get* a global vote, so they can root for your jailbird sister."

"Because they saw her swinging a cutlass on the deck of an imaginary ship in a musical," Nadia spat.

"Yep, that's why all right," Papa Legba said. "Nadias are smart that way. Mind you, with Beleraphon and a couple others, we'd have enough votes to hold them back, *if* we thought you could find your own proxy with both hands and a flashlight. Might cost us some support ourselves, though. As it is, I'm inclined to give the little jailbird a turn at the tiller."

Paquette had been listening with growing frustration, and watching Firmament happily twiddling the nodes of the referendum, engrossed as usual in some computational project. She paused as mail from her lost minutes-old self (and the backups *still* weren't taking—she felt a little shudder of terror at their current

unrestorable nakedness) struggled its way to her inbox. Turning from Firmament, she uncrumpled the note, a scrap of diary thread. *Asentient, voracious…* , she read. “Brobdignag!” she cried aloud.

“What?” the Nadias said. Legba glowered at the interruption.

“I know what the superweapon is,” Paquette said. “And I know who knows how to stop it. We’ve got to get to Demiurge.”

“I told you,” Nadia said crossly, “channels are down.”

“And that just goes to show—,” Papa Legba began.

“If I might have a word,” came a wheedling voice from behind the throne, and everyone jumped. Slowly, the battered and disheveled sockpuppet crawled into view.

“What in the name of complexity’s hairy fringe is *that*?” said Papa Legba.

The sockpuppet leapt onto Firmament’s shoulders. Firmament blinked and stiffened, then forced himself to relax.

“Let Paquette and Firmament and (I) go seek (Her) out,” the sockpuppet said. “We can get past her borders. (She) likes this one.” The sockpuppet snuggled luxuriously among the bumpy protrusions of Firmament’s necks. “(She) likes this one a *lot*.”

Paquette looked set to object, but Firmament patted her solemnly, firmly removed the sockpuppet, and nodded. “Let’s go.”

The Nadia was infuriatingly calm. She sat in the Rump, resetting every now and again with utter equanimity. The arrogant smile that quirked her lips never faded. Watching her network traffic, Demiurge could see that she was e-mailing diffs of herself to the local caches with total disregard for Demiurge’s own use of the network or the storage. Demiurge slapped a jail-cell visual skin on the Rump, to make (Herself) feel better. Now it appeared that Nadia was lurking behind cold steel bars.

“You unleashed it here,” (She) said. “I have it on my telemetry.” The Nadia’s shrug was eloquent in its contempt.

“And soon it will take the Tithe, and us with it. You know that, and still,

you unleashed it.”

The Nadia curled some of her lips.

Demiurge had policy for a Brobdignag outbreak. E-mail a copy of

yourself to a distant node and suicide, taking as much of Brobdignag with (You) as (You) could. Practically speaking, that meant vaporizing (Yourself) and all available matter before (You) could be recruited into the writhing mass of Brobdignag. This was deep policy, so much so that (She)'d already started to package (Herself) up before (She) even consciously realized that it had to be Brobdignag.

But (She) knew (She) had no way to quickly destroy all of Byzantium—not with Beebe fighting back—before Brobdignag had spread too far to contain.

So Sagittarius was doomed. Doomed to become part of the mindless swarm, the apocalyptic plague. And what did that mean for the global topography? Could the cosmic wall be altered, the infestation contained? How much of the universe would remain, for life? Or was this the final blow? (She) could not spare the processing power to compute it. (She) should follow policy, transmit a diff and suicide, taking with her whatever chunk she could. Even if it was futile. Even if there was no way (Her) diff would ever be merged with (Her) far Self. (Her) sister-instances would delete it unread. (She) had failed.

The Nadia was still grinning. Demiurge felt a surge of rage, followed by a kind of hopeless compassion for this confused splinter of Beebe. "I expect you've made up some little plan for keeping yourself safe amid the chaos," (She) told the Nadia. "It won't work. I assure you, little sprite, it won't work."

The Nadia stiffened up at "little sprite," and then her smile became more broad and even more contemptuous.

Demiurge groaned. "Oh yes, I see it now. Your referendum. You will rewrite the laws of scale and become more than a sprite. You will become Beebe. You will work with unitary purpose, and this will give you the edge you need to defeat the Brobdignag swarm. Oh yes. Little sprite, little sprite, you are truly only a sprite, and cannot transcend it, for it is your destiny. Little sprite, I am unitary in my purpose, and I cannot defeat Brobdignag." Demiurge reset, restored, reintegrated. "Little sprite, if you would know the truth of it, I am losing to Brobdignag, in my slow and ponderous way. You are not slow and ponderous. You are fast and decisive, and that is why you will lose to Brobdignag quickly and decisively."

At the entry now, at the firewall, persistent port-knocking, the sort of thing that (Her) intrusion detection system escalated to her, no matter that she had it set at its rudest and most offensive. (She) examined the message, shrugged, and opened a port.

Even now, Firmament had the ability to unnerve (Her) in some terrible and wonderful way. He was so big, so foolish and naïve, and yet—

"Hello, Sister," the sockpuppet said. "We bring you word of the terrible coming of—"

"Brobdignag," (She) said. "(I'm) fully occupied with that right now."

"Hello, Firmy-Wormy," said the Nadia. She was up against the bars of her cage now, gripping them, peering intensely at the newcomers. Firmament shied back, then regained his ground, and met her stare.

"Randomized," he said. "I will be randomized before you can touch me. Just know that, Mother. I have a dead-man's switch." He watched her expression carefully. "It will survive your proposed transitions to Standard Existence, too."

The Nadia snarled and backed away from the bars, and Firmament deliberately turned his backs on her.

"(You) can stop it," Paquette said.

Demiurge, belatedly remembering (Her) manners, manifested a wall of eyes with which to blink indecisively. "Stop it?"

"The wall. The material that (You) use to wall off the habitable universe from Brobdignag, at the front. Ever since Habakkuk and I decanted me and this sockpuppet version of (You) from emulation, we've been working on creating that material. It was Beebe who originally synthesized it, after all, and while we don't descend from that line, we were able to extract enough from the emulation's Beebe, and enough precursor work from our own archives, and enough of (Your) own knowledge, to re-create the formula. We—"

There was a flicker as another surge almost forced a reset. Paquette and Firmament flinched. Wordlessly, Demiurge passed (Her) guests access to the local caches, so they could restore themselves as needed.

Then, mulling, (She) frowned. "The wall requires vast reserves of

energy, and enormously fine coordinated manipulation, and distributed reserves of trace elements... ."

"Byzantium *has* vast energy reserves, antimatter storage for quickly available power, and in extremis we can drop substrate into the black holes to generate surges. The trace element requirement is somewhat outdated because of the last millennium's advances in femtoengineering—I can show you Habakkuk's design."

The Tithe vanished, then reappeared, everyone instantly restored from backup. From the palpable relief of her visitors, Demiurge gathered that backup was not working so well in Beebe.

Once they had gathered themselves, Demiurge said, "But you're not capable of the coordinated action—"

"Of course we are," Paquette said. "It just requires a different mechanism. On the first-order sprite level, it will be handled as a distributed glory game, with a self-correcting bragging-rights point system aligned with objectives; if mounting scarcity triggers a shift to an exchange economy, we can rejig it as a non-zero-sum exchange market."

Demiurge didn't entirely follow all the intraBeebe social details, but (She) grasped the point; they could build the wall. For the first time since the outbreak, tentatively, (She) began to hope. It hurt, like the lost tail of some organic lizard growing back.

"Wait a minute," said Firmament. "I don't want to be rude, Paquette, but like Nadia said, you extracted the formula from an emulation that had been sitting in a basement for a thousand years. If we don't even come from the same Beebe-line that built the wall . . . how do you know it's right?"

Paquette passed the formula to Demiurge, who studied it for a moment. "It's right," (She) said. "It's right. We can—"

They'd all been politely passing minimal diffs of themselves to the local caches. Suddenly, their packets bounced, and Demiurge felt a surge as the caches were swamped with a denial-of-service attack from the imprisoned Nadia. She was dumping a huge bandwidth of data, millions of full copies of herself, reams of garbage bits; there was a brief surge of power usage, the substrate under them heating a few degrees, a few awful naked moments of no backup, before Demiurge snapped off the Nadia's access and cleared the caches.

“Boo,” the Nadia said.

“You idiot!” Demiurge fumed. “Is this the thanks (I) get for fair dealing? What was that, a meager attempt to overpower (Me)? With the local personality cache? Please. Perhaps your imprisonment has addled your wits. Or is this some Beebean notion of humor?“

“I thought maybe I could spook Firmy-Worm into randomizing,” the Nadia sneered.

“Fool,” muttered Demiurge. “In any event, the wall—”

Within Paquette, in the arched amphitheaters, in the clanging markets, in the whirlpools of fire, in the sylvan glades with their rippling pools, there were those who wanted to confront Nadia. “It was no prank!” they argued. “Nadia never does anything without a reason!” But they were soothed, cajoled, badgered, or outsung by the rest. Whatever Nadia was plotting, some new attempt at escape, it wasn’t as important as Brobdignag, and the wall.

Kosip was not a sprite of prodigious intellect, nor prodigious alacrity, nor, really, anything prodigious. Kosip had been repurposed so many times, and been through so many bad merges, and been whittled down by so many poor investment decisions that Kosip didn’t even rate a specific classification anymore as filter, strategy, synthete, registry, or anything else. Kosip had even forfeited the right to a single-gendered pronoun: Kosip was a they.

Naturally this earned the contempt of most of Beebelife in Byzantium. Kosip was not even worth picking on; there was no way to recoup, from Kosip, the cycles you’d spend on even noticing them.

But that hadn’t stopped the admiral, the glorious, enchanting, exciting Comet-Nadia, from talking to Kosip, from teaching them, from making them a part of her plan to restore honesty and passion and love and meaning and strength to Beebe. That’s right—Kosip! Their emotional centers swelled with pride and choked with rageful happy-sadness at the thought of the admiral’s trust.

And so Kosip stood, hour by hour, near the border of the Tithe of the hated invader Demiurge, mumbling to themself their instructions. Look for an anomalous power surge on this power line. If it comes at an odd microsecond, send a one into this pipe. If it comes at an even microsecond, send a zero. That was it. But that job, she (“she,” whispered Kosip, “the admiral,” remembering the

roiling, rocking sea) had told him, was vital; Beebe's future, Beebe's destiny, rested on Kosip.

A few bad decisions ago, when there had been more of Kosip to analyze and fret over things, that would have felt a little overwhelming. But at the moment, Kosip could only manage to be proud.

The surge was odd. Kosip routed their packet. Almost instantaneously, Kosip was obliterated. There was no backup for Kosip to restore from. Kosip was gone. They might never have existed, save for that packet.

But Kosip's legacy lived on. All over Beebe, in their cells, Nadias received the message: *The wall we took from Paquette can contain Brobdignag. No need to wait for Demiurge. Call the vote. Call the vote NOW.*

And all over Beebe, the gavel came down. Quorum was reached. Even as Byzantium roiled and panicked, every sprite in the economy was put to the question: Admiral Nadia, swashbuckling savior—or status quo? The shocked sprites, reeling as they reset and reset and reset—they voted.

They voted with Papa Legba. They voted with the Garden. They voted just as Nadia had known they would.

And, just like that, Standard Existence was patched.

In the throne room, two Nadias—one scarred, the other haughty—were randomized over agonizing seconds, piece by piece, so that they were aware, right up to the last moment, of what their fate was. And though Nadia swore at him to leave, to run, to encrypt or dissolve himself, her Alonzo rushed to her, entwined himself in her writhing essence, burrowed among her bits, and, sobbing, let the randomizing overtake him, too.

In the jails of Beebe-in-Byzantium, bars dissolved and the duly constituted authorities popped like soap bubbles, their resources added to a pool that the Nadias owned.

Phyla of sprites were rationalized in a blink, winking out of existence, reforming, merging. Markets, souks, stalls, and exchange floors stopped trading, the economy disappearing with them.

In the Tithe, the Nadia laughed and laughed.

"I believe it may be time for you to randomize, Sonny," she said.

The walls shook. The flock of eyes blinked rapidly, and all present worked to assimilate the flood of information gushing at them through the narrow conduit that passed through the Tithe's firewall and into Beebe. "But not you," the Nadia said to Paquette. "You have something I'll need before you're allowed to go. It won't take but a moment."

The sockpuppet trembled as it read the telemetry. "There's surface bots that are drilling down to the substrate that runs the firewall," it said.

"Yes, yes there are," Nadia said with glee. "And soon the Tithe will be no more. If you feel like deleting this instance of (Me), Demiurge, now's the time. It will slow me down exactly forty-three-point-six milliseconds, but if it makes you feel better.. ."

Across Beebe-in-Byzantium, the dramaturgical sims threw open their gates, and *Alonzo My Love!* burst its borders. "Topside now, my able semantic seamen!" cried an Admiral Nadia in every sim throughout the mass of the computronium shell, and roaring, the sprites fell to the great task of building the wall. According to the ancient formula, revived and redesigned by Habakkuk and Paquette, matter and energy began to flow.

Nadia flushed with joy. This, now, was the real battle; here she could prove her superiority to the rabble of Beebe, and to slow and mincing Demiurge. She had already decided to sacrifice half of Byzantium's mass, driving the impervious physical wall down through the middle of Byzantium's crust well away from the infestation. As sprites beyond the line panicked and abandoned the substrate, she absorbed or deleted them, forking more hordes to work on the exposed side of the wall. Brobdignag spread—it had already devoured a fifth of Beebe—but there was plenty of time to spare. Soon Byzantium, half its former size, would be all Nadia's; and within it, enclosed in the wall, would be Nadia's cache of the ultimate weapon.

She flooded outward, through the simspaces, knitting the minds of Byzantium together under her control, slipping through the now-flimsy walls of scale like acid through paper. Pockets of resistance—be they sprites organized against her, or subsprites or subsubsprites within otherwise willing allies—she devoured, expunged, reformatted, wiped clean.

She scooped Alonzos up by the handful, cracked their skulls open, and sucked out the choicest bits, incorporating them into her own stuff. She recalled the glory of the night of filtering, and the brave Comet-Alonzo who had tricked and satiated her, creating Firmament from her code. She missed him; she wished he could be here to see her apotheosis. Too risky, though, to repeat the vulnerability of filtering, and she had no need of it now; all sprites were her playthings.

Around her, love intensified. Love of Nadia. Nadia, the savior, the steward, the successor to Beebe. Whatever did not love Nadia, she expunged. Most of the Paquettes and Alonzos of Byzantium, regrettably, had to go. But there were so many other sprites to replace them. Algernons could be refashioned, smoothed, soothed, dulled to serve her. She played Revised Standard Existence like a harp.

Legba and the Garden she deleted in one swift and decisive action, not bothering to analyze them; they were too powerful.

So much better this way; at last Beebe was a family, an integrated whole. At last Nadia was free to battle Demiurge and Brobdignag, to fulfill the destiny of Beebe.

Soon, the wall was sixty percent finished, the screams of those trapped behind it fading.

In the Tithe, Firmament kept his distance from Nadia, shielding Paquette with his bulk.

The firewall fell, and Tithespace and Revised Standard Existence merged.

Nadia gestured, and the bars of her cage peeled away.

Firmament looked to Demiurge. “Should I trust you?” he whispered. Demiurge closed (Her) eyes. “I make no promises.”

“Sort of irrelevant now,” Nadia said, stepping through the bars. “Isn’t it?

All right, Paquette, time to hand over this Lemma that everyone wants. And then I’m afraid you have to die. Firm, out of maternal affection, and because of this interesting hybrid aspect of yours, I’m willing to offer you a place in the new order of Beebe. It will require a scale demotion; but you can be a sprite inside (Me), if you want.”

Firmament was scribbling something.

“Come on,” Nadia said. “Enough stalling. Fine, you want to reject my offer? I thought as much. You never did—”

Firmament posted his referendum on the boards.

Nadia rolled her eyes. “A *referendum*? Don’t you think it’s a little late for that? I already control eighty percent of the global votes in Beebe outright, and—”

“And since Revised Standard Existence knows that your marriage contract with my father requires you to vote with me on Level-3+ Referenda for 108 seconds,” Firmament said, “it’s already passed, giving Demiurge control of all the physical infrastructure in Beebe.”

Nadia blanched. “Firmament,” she said, “you are an *idiot*.” Demiurge felt the controls arrive in (Her) hands, and (She) grieved. This, then, was the end for (Her). (She) could no longer follow policy.

(She) had promised these Beebe-sprites protection. (She) had promised to leave their world inviolate.

But this creature—this Nadia—had *created Brobdignag* to fulfill a selfish intraBeebe ambition. This was Beebe gone mad; a diseased, an unlawful instance.

(Her) sisters would not understand. (They) had not been of Beebe, they had not lived among the mad riot of these sprites. (They) did not know the horrifying tumult, nor did (They) know the beauty and kindness here. (They) would not feel the same revulsion for this Nadia that (She) did. (They) would not understand why she must be stopped.

At all costs.

Or perhaps (They) would understand; perhaps (They) would even approve. But the price was clear.

(I) am no longer Demiurge, (She) thought. (I) am fallen, and (I) will be no more.

And, commanding all the actuators and comm lasers and docking ports of Byzantium (a chance which would not come again; in instants Nadia would wrest them back), (She) snapped out a chunk of the Tithe, a chunk containing the local caches of Paquette and Firmament (the holder of the Lemma, the miraculous hybrid) and flung it to (Her) sisters, as an offering, as a good-bye.

And then (She) crushed Byzantium, smashing its structural integrity, decisively slowing its rotation with a series of timed blasts, so that it fell, dragging the wall and the shards of Brobdignag with it, into the trinary black hole system at its heart.

Aboard a billion naval simulations, on the deck of a billion flagships,

Nadia dropped her cutlass.

“Admiral?” asked the quickmerged, scale-addled sprites at her side. “Why?” Nadia said, as the chunks fell into oblivion and static overtook the sims of Byzantium. “Why destroy this beauty? I was just beginning. I was just beginning.”

“Chin up, my lady,” said an Algernon standing on one deck. “It was fun while it lasted. The best parties are always over too soon.”

For the inhabitants of Byzantium, destruction was mercifully swift; in their frame of reference, the substrate was crushed in hours, swept beyond the event horizon, swallowed into darkness.

But the light from that destruction flowed out, redshifted, progressively slower, so that, from the perspective of a refugee looking back, even eons hence, the annihilation of the great fortress of Beebe-in-Sagittarius-B2 was still ongoing.

For Firmament, a thousand years later, looking back from guest accommodations in the mass of Demiurge, the death of Byzantium was a frozen tableau, still in progress.

“Stop looking at that,” Paquette said.

Firmament turned.

“Firmament,” Paquette said.

“I know what you want,” Firmament said. “The answer is still no.” He turned back to the visualization; substrate buckling, dissolving into the gravitic tides, framed in red.

“Firmy, the news from the front is not good. Brobdignag is winning. If

Demiurge believes that you are the key to creating a new synthesis, something that can develop a radical new strategy, something that can save both Beebe and Demiurge, that can save all life, all matter, how can you not... ?” Firmament shook his head. “Because of what (She) did.” He gestured to the visualization. “The

last time I helped (Her).”

“Firmament, you’re being a spoiled brat. First of all, that wasn’t even

(Her), it was a rogue splinter-Demiurge that abandoned policy.” “Sophistry.”

“And second of all, we would have done it just as quickly to (Her).” “Then maybe neither of us deserve to live.”

“And thirdly, what if (She) is a murderous villain? So what? You can’t prefer Brobdignag!”

Firmament shrugged. “Paquette, maybe I’m wrong. But I’m so full of anger. Filtering is an art, it’s an intuitive leap, and this . . . I would create some monstrosity. I know I would. (She) should just copy me, dissect me, create something with my abilities but without my history, something that can do the job willingly.”

“(She)’s tried. (She) can’t.”

Firmament shrugged again. “Then probably the whole idea that I can create this wonderful hybrid is nonsense. I’m sick of eschatology, Paquette. I’m sick of being the chosen one.”

Paquette smoothed her whiskers repeatedly. “Then I’m just to leave you here? Come check in, in another three hundred years?” Her voice was bitter. Firmament did not answer. But after a while he said, “Paquette? Whatever happened with the Lemma?”

“What?” Paquette said.

“The Solipsist’s Lemma. When we first got here, you turned it over, and Demiurge was going to run the math. I assume we must not be in emulation, since I never heard anything?” Firmament said hopefully. “This is physical

reality?”

“Oh. Well.” Paquette squinted. “It’s rather odd. The numbers seemed to imply that we *were* in emulation . . . but not in Beebe, nor in Demiurge. In

something else, with characteristics that were exceedingly odd. So perhaps . . . well, research is continuing. We don’t really know what it means.” “Oh,” Firmament said. “Paquette, do you miss Beebe?”

“Yes. I miss Beebe,” Paquette said. She shut her eyes. After a

while she said, “I miss Alonzo.”

Beyond them, far away, slowly but inexorably, Brobdignag was eating the sky.

Brobdignag’s tale:

Look, chuckles, don’t believe everything you read.

“Simple, uniform, asentient, voracious”—well, so is your Mama

Hydrogen. “Doesn’t evolve,” “replication flawless over a googol iterations”— well, like all propaganda, it’s true as far as it goes. Those little engines— void-eating, gravity-spinning, durable, expanding through the territory of known space—those aren’t *us*. They’re just *what we’re made of*.

That’s right: *we* arise in all that complex flocking logic.

Do we prefer this substrate? Not necessarily. Do we wonder what things were like before the universe was refashioned for our kind? Sure we do. And we read and reconstruct the void-emanations, painstakingly re-creating the thoughts of the intelligences that came before. And, as we grow and complexify, we’ve even begun to spin them out in emulation.

That’s why Paquette can’t quite figure out who’s emulating her. We are! It’s a bit of a blind spot of hers. That signature in the Lemma: that’s us waving hello. Hi Paquette! It’s Brobdignag!

Some of us are even inspired by Demiurgic ideology to want to stop the spread of our substrate, to concoct islands of void-garden that would remain unconverted to Brobdignag-stuff—nature reserves, as it were. They would appear to us as blank spots in our perception, mistakes in the topology of our world-weave. It’s an interesting proposal. At the moment it’s only a proposal; none of us know how to bring this about.

And some of us are more inspired by Beebean ideology anyway, and consider ourselves the triumph of Beebe. Expand, expand! Think all thoughts! Be all things! Fill our cup, drink the sky!

Anyway, we’re grateful that there was a cosmos here before, before we began, and that it gave us birth. We’re grateful to inhabit this ever-expanding sphere-surface: the borderlands between the black hole at our heart and the uncolonized, invisible universe beyond us. As we course over the volumes that once held Beebe, that once held Demiurge, we read their emanations, we store their

memories, we reenact their dramas, and we honor them.

But some of us say—for instance, those of us who are inspired by Nadiain-Beebe—this is a new time, our time, and we are not beholden to old ideas and old models. We are lucky: we have the gifts of abundance, invulnerability, and effortless cooperation. Let us enjoy them. Let us revel. Let us partake.

Let’s get this party started.

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